BRITISH MEDICAL JOURNAL

LONDON SATURDAY MAY 9 1942

MEDICINE AND THE PUBLIC WELFARE*

BY

VISCOUNT DAWSON OF PENN, M.D.

When the war, as now, is passing through an anxious phase we are apt to say, "A plague on reconstruction talk—first win the war." This is anxiety entangling the mind in one-track thinking. On the contrary, we should at times occupy our minds with fancies free and especially with the future, in order to re-create our minds for their war duties; for in so doing we indirectly assure ourselves there will be a future. And here, in passing, I may remind you that the best psychological treatment is often that which is implicit rather than explicit.

War does not so much produce social changes as hasten the fruition of those already in seed or bud, or again bring back to the light of day projects born years previously but later lost in the mists of inertia or political exigency. For 25 years or more the idea has been spreading that the practice of medicine should be occupied not only with those disabled by sickness or accident but also, if not primarily, with the building up of health, and that for this extended purpose our medical services have become too haphazard and incoordinate in their arrangement. In other words, organization has not kept pace with ideas. If the community is to have in its care the health of its citizens as it has their education, the location of health centres and hospitals must, like that of schools, correspond to the distribution and needs of the population. Indeed, it is surely apparent that the rearing and training of a healthy body and the education of its occupant are two processes so interdependent that a system of health centres is as necessary as a system of schools, and when it is recalled that the integration of health is in many of its aspects a matter of education the parallelism becomes closer.

Health Services in Retrospect

A brief retrospect will clarify this contention. Although the care of public health came into being many years before public elementary education was instituted in 1870, it was in those early years, for the most part, impersonal and environmental, and concerned itself with such matters as drainage, sewerage, disposal of refuse, pure water supplies, air, and light. It was not until 1915 that there opened up the chapter of communal care for the health of the human body in the shape of special services for expectant mothers, maternity, infants, children in schools, dental care, and for certain diseases, of whicl. tuberculosis was the forerunner (1912).

All credit to the founders of the communal health services; but greater fame would have been theirs had they secured the active participation of the whole profession. Instead they reared these services in bureaucratic isolationism. The responsibility lay in equal measure with the Royal Colleges and the teaching hospitals and their staffs; their minds were held within the ancient confines of curative medicine and were blind to the enlarging opportunities opening out before them. The result was a gulf fixed between preventive and curative medicine, which has now to be bridged. In these health clinics preventive and curative medicine meet, and who can doubt that general practice should embrace both and that hospital practice and the medical curriculum should include both?

Immediately after the war of 1914-18 the Ministry of Health was founded, and in its constitution there was provision for the setting up of a "Consultative Council on Medical and Allied Services." This Council was intended as a link between the profession and the Ministry, and I was appointed its chairman. Its first reference was: "To consider and make recommendations as to the scheme or schemes requisite for the systematized provision of such forms of medical and allied services as should, in the opinion of the Council, be available for the inhabitants of a given area." Here was the notion of the region.

A Basis for Reconstruction

In 1920 there followed a unanimous report the recommendations of which might well form a basis of reconstruction to-day. Indeed, the movement of 1920-1 has been reborn and extended under the name of regionalization, which is being furthered with both skill and purpose by the Nuffield Provincial Hospitals Trust and by the Planning Commission of the British Medical Association.

The next landmark was the Local Government Act of 1929, which among its provisions included the setting up of rate-supported municipal and county hospitals, which are now making such progress in our midst.

Another trend, more and more apparent during the last 25 years, is the need for greater institutional provision. The increase of knowledge, and with that the development of team-work, has made this inevitable. The doctor works best where equipment and ancillary services are available, and side by side with his fellows. Further, such institutional provision is economical of both time and cost and makes a health service available for all citizens. In short, the tendency is for the centre of gravity of practice to shift away from the home to organized surgeries, clinics, health centres, and hospitals, and these would be distributed in their various grades throughout the region so as to constitute a co-ordinated scheme of service—some deriving from voluntary and others from rate-supported institutions. The way in which the war has made clear the importance of industrial medicine illustrates this theme.

In the realms of both health and education there is organized provision for the welfare of the young from birth to the present school-leaving age. After this but little is ordered for either education or health. Yet youth in their teens and onwards are entering workshops, factories, and mines, and, let us hope, agriculture, and in these formative years their success or failure in life may well be determined.

An Ordered Service of Medicine

Here is opportunity for health centres attached to industrial establishments to concern themselves with healthy living. They will get to know physiques and aptitudes and their relation to working conditions; they will note defects of frame and tendencies to ill-health while in their early and curable stages, and provide corrective treatment for them; they will send cases of illness to their own or suitable hospitals, and on the positive side will direct physical training, encourage games, superintend the dietary of the canteens, and, above all, carry on the health education of the workers, impressing upon them that in the last resort their health depends upon themselves. To take the example of tuberculosis, it is not too much to say that, through the agency of such health centres, which would include examination of workers by *x* rays, the elimination of tuberculosis would in a few years make giant strides. Here would be medicine at

*Speech at a meeting of the Medical Society of a Military Hospital.

its best—prevention and cure hand in hand, scientifically and socially ordered and new knowledge, ever accruing. And here progress can be achieved during the war: no mass institution of health centres, but a few well-conceived experiments which would take cognizance of services already existing and prepare the way for future developments.

Is it not plain that for any national planning scheme to be successful it is necessary that voluntary hospitals and agencies on the one hand and rate-supported hospitals and local authorities on the other hand should work together in double harness with the guidance but not direct governance of the State, and that personal health services and curative medicine must be brought into close co-operation in general practice, in hospitals, health centres, and clinics, and, not least, in education.

Both the rate-supported and the voluntary hospitals have their values. Both have the welfare of the community at heart and are necessary one to the other. The former, though still needing adjustments and improvements, have made remarkable progress in the few years since their inception, and often show readiness to co-operate with the voluntary hospitals, notably in the County of London. For their highest posts clinical work is unfortunately at a disadvantage compared with administration. Their chief disadvantage is that they are not yet in close enough contact with the collective mind of academic medicine, which is illustrated by the defective methods for the appointment of their visiting staffs. On the other hand, the leading voluntary hospitals have centuries of tradition behind them; they have been the homes of the outstanding minds and thinkers in medicine, and to-day hold leaders of the profession. Their faults are that they think too much in terms of their individual selves and fail to appreciate they are members of a group. If in this changing world they were to yield some of their ingrained detachment and enter into this new fellowship they would make an incomparable contribution to the welfare of the community.

An Evolutionary Plan

If I have your agreement that an ordered service of medicine (just as an ordered service of education) is necessary for the welfare of this country, I submit that such service must be something which suits the habits of thought of our people and should evolve from what already exists—and it may be stated with confidence that what already exists is, speaking generally, very good.

General practice, the basis of any scheme of medical services, will require institutional provision at health centres and selected hospitals. In the 1920 scheme hospitals were grouped into primary, secondary, special, and teaching. Primary hospitals were to be staffed by general practitioners aided by visiting consultants, and the remaining groups by consultants and specialists.

Under regionalization such a scheme of graded hospitals (some hospitals rate-supported, others voluntary) and of personal health services would be implemented to meet the needs of the region and to eliminate overlapping and unnecessary units. A teaching hospital linked to a university would, wherever possible, be the focus or the directing centre of the region, and there would appear to be a general agreement that dividing the country into regions, although it may involve the combining of local government areas, for this purpose would ensure the best service.

If, then, we assume for the moment the country divided into regions, and a regional council for the ordering of each region, the question arises, What should be the powers of the regional council; should they be advisory or executive? Whether a regional council has executive or only advisory powers, the overriding desideratum is that the medical services should be guided by those who have knowledge and purpose and are not unduly influenced by political-mindedness. In either case a regional council will be faced by the difficulty of relations with multiple local authorities and of cutting across their boundaries. Again, in either case it will contain on the one hand representatives of voluntary medical and allied services, and on the other hand nominees of local authorities and probably a few co-opted members.

If it is to have executive powers, these powers would either be overriding and need to be established by statute or they would be delegated by local authorities themselves. The advantages would be correlation of services by unity of command for the whole region, and a body possessed of the requisite knowledge and devoted with singleness of purpose to personal health and hospital services. But such a regional council would need to be supplied with funds and possessed of an administrative and financial establishment, which could not fail to rub shoulders with the major local authorities within the region, involving contacts so close as to be charged with the danger of friction. Thus might be imperilled that confidence and co-operation without which the regional council could not attain success.

On the whole I suggest it would be better in the first instance—on a five-year plan if you like—for the final executive power to be with the major local authorities through statutory committees (on the lines of the education committees), with an obligation placed on these committees to seek the advice of the regional council, which would have the right, in the event of its advice being rejected, of appealing to the central authority in Whitehall. If in its turn the regional council were assisted by a medical committee representative of the region on which medical officers of health had seats, I suggest it would as an advisory body have more weight than if it were itself possessed of full executive functions.

There is yet another, and bolder, plan worthy of consideration, which would be an advance in political science. Government to be efficient must be guided by scientific knowledge. Autocracies avail themselves of that knowledge with greater readiness because the dictator sets up the appropriate technical body and without delay adopts or refuses its advice, whereas democracies dilly-dally because so many departments that do not understand the technical problems must have a say. Innumerable examples come to mind—synthetic rubber; the synthesis of glycerin, which would have saved our fats, bread, milk, vegetable protein; protective measures against the spread of diphtheria and venereal disease—to mention a few examples at random.

To meet this difficulty democracy is setting up semi-autonomous executive bodies on which the Government is strongly represented and otherwise consisting of those who have the requisite knowledge. Radio-activity, broadcasting, electricity are examples of the subjects dealt with. Why should not health and hospitals be under such semi-autonomous bodies? In the 12 or more regions they would be based on the major local authorities, and in London there could be a central semi-autonomous authority with power delegated from the Ministry of Health. It is, I submit, worth thinking about.

Payment and Staffing of Services

Next the question of payment for services received. It is surely right in principle that patients should make a reasonable payment either directly or through contributory schemes or other forms of insurance. Here I submit that though contributory schemes are sound in idea and practice they are likely some day to evolve into a nation-wide scheme of comprehensive social insurance, and the planning of services would make this practicable. The assessment of payments by patients and of remuneration to staffs of hospitals would need to be uniform as between State-supported and voluntary institutions in the same region.

Let us pass to consider the staffing of these services in the homes, surgeries, health centres, and hospitals. Would the conversion of medical practice into a whole-time service be in the national interest? With the prospect of large social and economic changes following the war the answer might in the course of years be in the affirmative. Fortunately no answer is needed now. If agreement on planning is reached, it can only be implemented step by step, for a full pattern of services will not spring up in the night. The first stage of implementation will be the co-ordination of existing hospital services and the bringing of personal health services into the body of medical practice and the various people concerned in this implementation learning to work together.

These are the most urgent needs. Health centres and clinics will usefully appear here and there, but on no large scale until experience of their varying designs and functions has been gathered. Gradualness is inevitable.

With the payment of visiting staffs of hospitals, with the staffing of health services by suitably qualified general practitioners, with the upgrowth of industrial medicine, and the habit

of some local authorities to favour whole-time service, not to mention the proposed extension of panel practice, it is clear that the earnings of the profession will be derived in increasing proportion from salary and in decreasing proportion from fees.

So it should be with the staffing of hospitals. Apart from the professorial units, the larger hospitals will doubtless offer increasing opportunities to men who desire to undertake whole-time hospital service. The London County Council affords a good example of whole-time and part-time men working side by side.

Freedom and Elasticity

Five years will show us the way. We must innovate greatly but quietly. Meanwhile we can pause to consider a whole-time medical civil service on its merits. It would be a more compact and tidy administration, and would probably be run at less cost; but would it have the same value? We have an example of a whole-time service in the R.A.M.C. For war its organization is admirable, but for civil life would not its administration be too rigid, advancement too dependent on seniority, and its day-to-day work without a sharp enough spur of ambition? It is important not to confuse ambition with egoism. Ambition stimulates a man to do his best, and a healthy thought of self consorts well with a desire and endeavour to help others. A whole-time altruism is a futile philosophy.

There are few callings in which there is so big a gap between routine and the best work as in medicine, and no profession needs to be so elastic in its government if it is to be dynamic, not static. Its front line of knowledge is always mobile and often advancing; the men working there need freedom for initiative and should be unfettered by the formulae of administration, and, may be, on the other hand, by the demands of practice. And the same considerations hold in the sphere of clinical practice, for though we need ordered planning we must strive to avoid any cast-iron uniformity. Rather do we seek unity amidst diversity; for man, whatever his political colour, is individual, and in illness even more so than in health, and his doctor must remain an individual and not become an official. It is here that medical planning is up against its crucial difficulty, in that it requires collectivism for its fabric and individualism for human relationships. And individualism will not flourish easily within the rigid boundaries of a State service, but needs the freer atmosphere which belongs to the voluntary hospitals' tradition; for in the difficult conditions of a greatly changing world doctors will need not only knowledge but understanding if they are to guide bodies and minds along the straight road of health and content.

ESTIMATION OF PROTHROMBIN WITH VENOM AND LECITHIN

BY

L. J. WITTS, M.D., F.R.C.P.

Nuffield Professor of Clinical Medicine

AND

FELICITY C. G. HOBSON, B.A.

(From the Radcliffe Infirmary, Oxford)

In earlier papers (Witts and Hobson, 1940, 1941; Hobson and Witts, 1941) we described the use of solutions of Russell-viper venom and lecithin in place of the tissue extracts commonly used in the estimation of the prothrombin time. A brief account of our present technique and the normal range of variation may be of interest to workers in this field.

Technical Details

Glassware.—Tubes are checked with a gauge to ensure that they are all of the same internal diameter. Glassware must be scrupulously clean; tubes are left in potassium bichromate and sulphuric acid cleaning solution overnight and then washed in running water for at least 4 hours.

Lecithin.—This is ovolecithin *B.P.C.* as purchased. Specimens are variable and not all give such good effects as we have described. It is therefore wise to try another sample if first results are disappointing. The active principle is not known, but it is probably an impurity or a breakdown product rather than pure lecithin. The strength of the stock solution of lecithin in alcohol should not be less than 10% to avoid an alcohol effect when the lecithin is added to the venom. As lecithin solutions become acid on standing the alcoholic solution of lecithin should be adjusted to a *p*H between 7 and 8 by means of a saturated solution of caustic soda in 95% alcohol; the reaction should be checked at fortnightly intervals. The optimal concentration of lecithin is 0.5%—i.e., 0.05 c.cm. of 10% alcoholic solution of lecithin in 1 c.cm. of the actual dilution of venom which is used.

Calcium.—We use M/40 $CaCl_2$ solution, which is the same as for Quick's test.

Temperature of Water-bath.—The optimal temperature is from 37° to 43° C. As prothrombin is very thermolabile, it is wise to work at the lower end of this range. Our observations have been carried out at 38.5° C.

Plasma.—Nine c.cm. of blood, withdrawn rapidly and with special precautions to avoid trauma, is promptly and thoroughly mixed with 1 c.cm. of M/10 potassium oxalate and centrifuged at 1,500 r.p.m. for 5 minutes. The duration and speed of centrifugalization should be maintained constant. If there is obvious haemolysis the plasma should be discarded, more particularly if the lecithin difference is to be determined. As oxalated plasma is not stable for much longer than an hour at room temperature the oxalated blood or plasma should be put into the refrigerator as soon as possible after venepuncture and removed only immediately before the estimation of the clotting time. It seems immaterial whether the blood is centrifuged soon after venepuncture or just before the estimation. In the refrigerator the plasma will keep its clotting time unchanged for at least 24 hours.

Estimation.—A dry clean test-tube (50 by 8 mm.) is placed in the water-bath and 0.1 c.cm. of plasma and 0.1 c.cm. of the venom–lecithin reagent are added. Mix and leave to attain the temperature of the water-bath; the right time is about 1½ to 2 minutes. Then add 0.1 c.cm of the calcium solution, which is kept in the incubator alongside the water-bath, and start the stop-watch. The end-point is different when venom alone and venom–lecithin are used. In both cases the tube is held at a slant of 45 to 60 degrees and rotated round its longitudinal axis. The end-point with venom alone is the moment when fibrils of fibrin first appear. If the same criterion is used when the venom–lecithin reagent is employed the end-point is much more difficult to detect, because the opalescence obscures the fibrin fibrils, as Fullerton (1940) has pointed out. As the tube is slowly rotated, however, a fine film of opalescent liquid quite suddenly appears on the inside surface of the tube above the surface of the mixture. This film is actually coagulated plasma, and the end-point is the moment when it is first seen. It is a very sharp end-point, and is best seen by diffuse light. The tube should not be rotated round its horizontal transverse axis or shaken, because these manœuvres accelerate the end-point in a variable manner.

Lecithin Difference.—The lecithin difference is the difference in seconds between the clotting time with venom alone and with the venom–lecithin reagent.

Normal Values and Range of Variations

We have previously shown that whereas different batches of Russell-viper venom may vary in strength, samples from the same batch are constant. In the present investigation we have estimated the accelerated clotting time of the plasma from 56 normal men and women (medical students, laboratory workers, and nurses), using venom from a single batch. The venom was used in two dilutions—1 in 10,000, which is the maximum potency, and 1 in 80,000, which had seemed in our earlier experiments to provide a more convenient speed at which to work. Quick's test was also carried out on these same plasmas. For this we used two different preparations of dried rabbit brain. The first was prepared for us by Messrs. Boots Pure Drug Co., Ltd., who mixed 10 g. of dried rabbit brain so that it was homogeneous and then packed it in evacuated ampoules, 0.1 g. per ampoule. The second preparation was made in our own laboratory as required, and represents several batches. The results are given in Table I.

TABLE I.—*Normal Range of Variation for Quick's Test (Prothrombin Time), using as Thromboplastin Dried Rabbit Brain and Two Different Dilutions of Russell-viper Venom, With and Without Lecithin*

Reagent	No. of Observations	Coagulation Time in Seconds		Coefficient of Variation %
		Mean	Standard Deviation	
Dried rabbit brain (Oxford)	55	20·3	± 1·5	7·4
Dried rabbit brain (Boots)	55	22·0	± 2·2	10·0
Venom 1 in 10,000 ..	56	16·9	± 1·5	8·9
Venom 1 in 10,000 plus lecithin 0·5%	56	5·9	± 1·0	16·9
Lecithin difference ..	56	11·0	± 1·7	15·4
Venom 1 in 80,000 ..	56	22·2	± 2·0	9·0
Venom 1 in 80,000 plus lecithin 0·5%	56	10·0	± 1·1	11·0
Lecithin difference ..	56	12·2	± 2·8	22·9

The results suggest that when the reagent is used at its maximum potency accuracy is lost, presumably because the error in timing is constant and forms a larger proportion of the whole when coagulation takes place more quickly. If coagulation is unduly prolonged the end-point is not sharp, and it is probable that the greatest accuracy is obtained when the coagulation time lies between 10 and 30 seconds. In normal subjects venom alone gives slightly more consistent results than venom plus lecithin, a point made by Fullerton (1941), but the addition of lecithin is a safeguard against errors which may occur if venom alone is used in abnormal subjects or without special care in collecting the plasma. The lecithin difference is higher when the venom solution is somewhat more dilute than the maximum potency, and this, too, has advantages. We suggest that when the venom–lecithin reagent is used for the determination of accelerated clotting times it should be standardized to give a normal value of 10 seconds. This is identical with the clotting time when acetone-extracted rabbit brain is used in Quick's test (Pohle and Stewart, 1939), and the figure has certain advantages when we come to express the results in terms of prothrombin. Any venom which will not reduce the clotting time to 10 seconds when fortified with lecithin should be discarded.

The range of variation of the clotting time of 56 normal human plasmas with a venom–lecithin reagent standardized to give an average value of 10 seconds was 8 to 12 seconds. The coefficient of variation was practically the same when we used dried rabbit brain. Nygaard (1941), using acetone-extracted rabbit brain in 32 normal adults, found an actual range of 11 to 19 seconds and, by statistical computation, an average prothrombin time of 13.3±0.35 seconds. Owen and Toohey (1941), employing fresh emulsions of human brain and rabbit brain in 97 normal controls, found a range of 10 to 16 seconds and an average of 13.97 seconds. Holmboe and Holmboe (1940), who used 0.5% emulsion of an extract of sheep brain, in contrast with the usual 10% emulsions, found a range of 55 to 85 seconds, with an average of 70 seconds. The coefficient of variation with all these techniques is of the same order, and it is probable that this represents a real difference in the coagulability of normal human plasmas. It seems unlikely, however, that it is entirely or, indeed, mainly due to variations in the quantity of prothrombin.

Expression of Results

As normal values for accelerated clotting times vary with the technique, some method of scoring or comparison is desirable. The simplest is an index, in which the reading obtained is compared with the normal value. Illingworth (1939) uses as prothrombin index:

$$\frac{\text{Normal time} \times 100}{\text{Observed time}}$$

and finds indices in health of 100±10. As we have shown, the normal range of variation is a good deal wider than this. This index is nevertheless a rational method of expressing prothrombin values because, as we shall see later, the clotting time is inversely proportional to the concentration of prothrombin.

Others have preferred to use a standard of reference in which the clotting times are related to the amount of prothrombin actually present. A correlation curve of this type may be obtained by making progressive dilutions of oxalated plasma and measuring the accelerated clotting time of each dilution (Quick, 1937). Saline is an unsatisfactory diluent, as it lowers the concentration of protein, and prothrombin-free plasma or a solution of fibrinogen should be used. We use "alumina plasma," which is normal plasma from which the prothrombin has been absorbed by aluminium hydroxide (Quick, 1936). The plasma is shaken with aluminium hydroxide cream (C-gamma reagent) in the proportion of 0.1 c.cm. of cream to 1 c.cm. of plasma, incubated for 15 minutes at 37° C., and centrifuged 15 minutes at 2,500 r.p.m. Prothrombin can also be removed from the plasma by Seitz filtration (Lozner, Kark, and Taylor, 1939). Both methods are simple but unfortunately far from ideal, as R. G. Macfarlane and R. H. Mole (1942), working at this hospital, have shown that the plasma may be considerably altered in other respects when the prothrombin is removed by alumination or Seitz filtration.

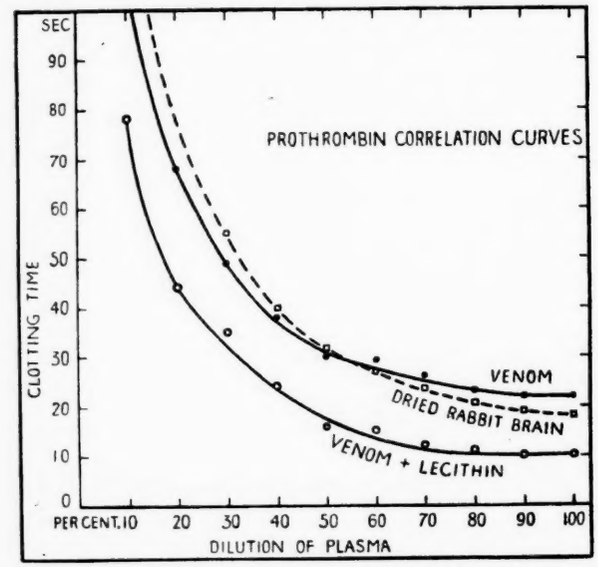

FIG. 1.—Curves correlating the prothrombin time with varying concentrations of prothrombin as obtained by increasing dilution of the plasma. The curves are from different normal subjects, but they show the similarity of the results with different thromboplastins.

Correlation curves for venom, the venom–lecithin reagent, and dried rabbit brain are shown in Fig. 1; they all have the same shape. Coagulation times may be converted into prothrombin percentages by reading the corresponding value from the chart or by using a formula derived from the curve (Quick, 1939), but it is better to make dilutions of the unknown plasma and obtain several readings for comparison with the normal curve. In practice these curves are not very convenient for converting accelerated clotting times into prothrombin percentages because little change takes place in the coagulation time until the prothrombin is reduced to 30% of normal and only the narrow range between 5 and 30% is really suitable for readings. Nygaard (1941) has stated that each concentration of prothrombin of the undiluted plasma has its corresponding dilution curves, or, in other words, that curves from subjects with hypoprothrombinaemia cannot be made to fit the normal curve; but this has not been our experience, and it may well be that Nygaard has been led astray by the use of saline as a diluent.

Jaques (1941) has shown that a straight line is obtained if the logarithms of the clotting time are plotted against the logarithms of the *thrombin* concentration, and we have found the same approximately true of *prothrombin* concentrations in our dilution experiments. When the data from all the available instances were plotted as logarithms of clotting times against the logarithms of plasma concentration, it was clear that each set could be fitted reasonably well to a straight line and that the slopes of the lines did not differ greatly in the different instances. The data from the 13 instances available were therefore pooled and the slope of the line best fitting all the data was calculated. The value obtained was -1.01 ± 0.03. Since

this is not significantly different from unity, it indicates that the clotting time is inversely proportional to the plasma concentration. In human plasma the agreement between the calculated values and the observed values is often close, as shown in Table II and Fig. 2. In plasma from the dog and the rabbit

TABLE II.—*Data of Prothrombin Titration on Human Plasma with Various Thromboplastins. Successive Dilutions of the Plasmas were made with Prothrombin-free Aluminated Plasma*

Reagent	Subject	Plasma Concentration %									
		100	90	80	70	60	50	40	30	20	10
Venom alone: Stypven 213 1/80,000 ..	O'B.	22	22	23	26	29	30	38	49	68	115
Venom + Lecithin: Stypven 213 1/80,000 + lecithin 0·5%	O'B.	10	10	11	12	15	16	24	35	44	78
,, ,,	So.	9	11·5	13	13·5	14	16	18	23	30	175
,, ,,	St.	10	11	12·5	15	17	20	24	29	39	62
,, ,,	Ta.	10	12	13	15	16	19	24	27	35	55
,, ,,	Bl.	11	11	13	16	19	22	26	31	40	70
,, ,,	Al.	11	13	14	16·5	20	24	30	36	52	85
Rusven 1/50,000 + lecithin 0·5%	Mo.	10	11	12	13	14·5	19	23	31·5	55	210
Stypven 226 1/60,000 + lecithin 0.5%	We.*										
20/11/41 ..		7	7	8·5	10	13	15	18	24	32	54
26/11/41 ..		16	17·5	18·5	22	27	35	44	56	80	140
30/11/41 ..		27	29	34	43	48	56	69	100	130	240
Dried rabbit brain	Sm.	23	24·5	25	25	29	30	40	42	62	150
	Mo.	18	19	20·5	23·5	27·5	31·5	40	55	120	290

* Before and after dicoumarin.

the observations often diverge from the straight line a good deal, particularly with the higher concentrations of plasma. The divergence can be expressed by saying that in high concentrations of plasma the clotting time is longer than the ideal, whereas in low concentrations of plasma it is shorter. It is not due to the speed of the accelerated clotting reaction in these animals and consequent inaccuracy in measuring the times, as it occurs with relatively slow reagents such as venom alone.

These methods of expressing the results in man apply whatever type of thromboplastin is used, though it is probable that

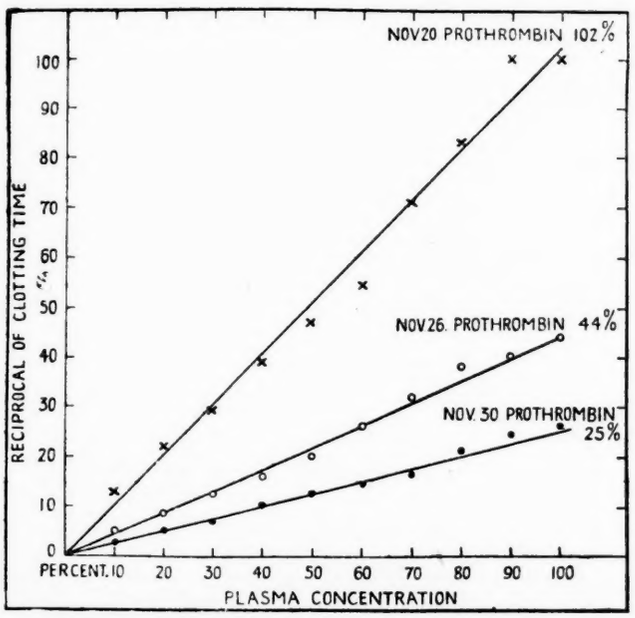

FIG. 2.—Prothrombin dilution curves from patient We. before and after treatment with dicoumarin. The lines are plotted from the values for prothrombin calculated from the data in Table II; they agree fairly closely with the individual observations. As the venom-lecithin reagent used in these experiments had not been standardized and gave a normal clotting time (C) of 7 seconds, reciprocals have been calculated as 700/C instead of the standard 1,000/C.

divergencies from the ideal are higher with venom alone than with the venom-lecithin reagent or tissue extracts. An example of the use in clinical work of complete prothrombin dilution curves, charted in the way we have suggested, is given in Fig. 2, which shows the values obtained from a patient before and during treatment with dicoumarin (Butt *et al.*, 1941). Such a complete range of titrations is unnecessary in routine work, but the graphs show the value of estimating the clotting time of several dilutions of any particular plasma. The results of our observations are expressed somewhat dogmatically in the following conclusions:

1. In estimating prothrombin greater accuracy can be obtained by measuring the accelerated clotting time of several dilutions of the plasma—e.g., 100%, 50%, and 25%. These dilutions are best made with prothrombin-free plasma, but normal saline can be used with little disadvantage.

2. Graphs of prothrombin estimations are best made by plotting the plasma concentration as abscissa against the reciprocal of the clotting time as ordinate. Reciprocals can be obtained from four-figure mathematical tables.

3. If the reagents are standardized to give a clotting time of 10 seconds at 100% plasma concentration, then the amount of prothrombin in a particular instance is calculated from the equation:

$$\%\ \text{normal prothrombin} = 100\left(\frac{\text{mean value of } 10^3/\text{clotting time}}{\text{mean value of plasma concentrations}}\right)$$

Thus an accelerated clotting time of 8 seconds with undiluted plasma would indicate a prothrombin level of 125%, and 12 seconds would indicate 83%. In another case the times actually observed were 10 seconds at 100% plasma concentration, 20 seconds at 50% plasma concentration, and 39 seconds at 20% plasma concentration. Hence the prothrombin level was:

$$100\left(\frac{100+50+26}{100+50+20}\right) = 104\%$$

4. To standardize the venom-lecithin reagent, make up a series of dilutions of venom in saline, adding 0.5% lecithin to each dilution. Now find the concentration of reagent which gives a clotting time of 20 seconds at a 50% concentration of normal plasma, and check it again to see that it clots undiluted plasma in 10 seconds.

Limitations of Test

Although we have shown how accelerated clotting times may be converted into prothrombin percentages, the calculation is based on the assumption that the accelerated clotting time varies only with the amount of prothrombin present. Experience has shown that this is true often enough for the test to be of clinical value, but it is by no means always the case. All that we are measuring is the time in which the plasma clots under certain arbitrary conditions, and when we express this in terms of prothrombin we are making assumptions which may be erroneous. This point is illustrated by the following experiment, in which the patient received an injection of 80 mg. of heparin intravenously (Table III). The clotting power of

TABLE III.—*Effect of Intravenous Heparin on Coagulation and Prothrombin Time*

Time in Minutes after Injection of Heparin (80 mg. I.V.)	Platelets per c.mm.	Bleeding Time in Minutes	Coagulation Time in Minutes			Prothrombin Time in Seconds				Clot Retraction %
			Lee and White	Dale and Laidlaw	Howell	Dried Rabbit Brain	Venom	Venom + Lecithin	Lecithin Difference	
0	414,000	1	9·5	5	2	19·5	24	7	17	Good : 48
5	432,000	1	50	14	15–30	28	120–150	14	120	Nil : 26
30	520,000	1	100	9	6–10	24	90	10	80	Nil : 40
90	523,000	1	37	10	6–7	20	37	7·5	29	Good : 50
240	370,000	1·5	10	4·5	2·2	19·5	24	7·5	16	Good : 42

the blood, as measured by a variety of techniques, was uniformly diminished and therefore the prothrombin time was increased. Heparin acts both as an antiprothrombin and an antithrombin, but there is no evidence that it alters the prothrombin itself either quantitatively or qualitatively (Ferguson, 1939). It would therefore have been inappropriate to express these altered coagulation times in terms of hypoprothrombinaemia, and the only legitimate observation is that the coagulation of the blood was diminished. At 90 minutes the prothrombin times had returned to normal and excluded hypoprothrombinaemia; the unaccelerated clotting times were still high and demonstrated the presence of a coagulation defect; the high lecithin difference was in keeping with the fact that this

was not haemophilia. Conditions which are strictly comparable to this phase of the experiment occur spontaneously in man, and we hope to discuss them on another occasion.

Discussion

These data are presented in the first place to show that a venom–lecithin reagent gives results in the accelerated clotting test which are in all respects comparable to those of thromboplastins such as brain extract; and in the second place to give figures for normal values and range of variation. The most potent accelerator of coagulation which we have used is a mixture of Russell-viper venom with 10% emulsions of brain. When this is added to normal plasma, clotting occurs in 5 seconds after recalcification, which is faster than with any other reagent recorded in the literature. Such a reagent demands for its study instrumental methods such as Nygaard's, which are unfortunately hard to procure at the present time. Without such instrumental aids excessive potency of the clot-accelerating reagent may, as we have shown, be a source of error. We hold no brief for Quick's test in any of its modifications as a means of estimating prothrombin. It is affected not only by the rate of conversion of prothrombin into thrombin but also by the presence of inhibitory or accelerator principles. It is nevertheless a valuable clinical test when due heed is paid to possible fallacies. Russell-viper venom and lecithin are relatively cheap and stable reagents for the test. They allow us to decompose the action of thromboplastin into its water-soluble and lipoid-soluble moieties and thus gain more insight into disturbances of coagulation than is possible with the more complex reagent. They have the additional advantage that they are effective in widely different animal species. Results with dicoumarin suggest that this is a point of great importance, and we shall deal with it in a subsequent paper.

Summary

Quick's prothrombin test is based on the hypothesis that if the coagulation of plasma is accelerated by excess of thromboplastin the speed of coagulation will depend mainly on the amount of prothrombin present. Other things being equal, the speed of coagulation is inversely proportional to the concentration of prothrombin.

When reagents composed of mixtures of Russell-viper venom and crude lecithin are used as thromboplastins the coagulation time of recalcified plasma can be reduced to 5 seconds. Unless instrumental methods of recording are used, such reagents are too swift for accurate work.

The venom–lecithin reagent has been standardized to give an average coagulation time of 10 seconds. The normal range of variation has been determined, and methods of scoring the results in terms of prothrombin are discussed.

We are indebted to Dr. R. H. Mole for much help in standardizing the technique of the test, and to Dr. R. B. Fisher for explaining the mathematical treatment of the data.

REFERENCES

Butt, H. R., Allen, E. V., and Bollman, J. L. (1941). *Proc. Mayo Clin.*, **16**, 388.
Ferguson, J. H. (1939). *Proc. Soc. exp. Biol.*, N.Y., **42**, 33.
Fullerton, H. W. (1940). *Lancet*, **2**, 195.
—— (1941). *British Medical Journal*, **1**, 98.
Hobson, F. C. G., and Witts, L. J. (1941). *J. Path. Bact.*, **52**, 367.
Holmboe, H. S., and Holmboe, R. W. (1940). *J. Lab. clin. Med.*, **26**, 408.
Illingworth, C. F. W. (1939). *Edinb. med. J.*, **46**, 762.
Jaques, L. B. (1941). *J. Physiol.*, **100**, 275.
Lozner, E. L., Kark, R., and Taylor, F. H. L. (1939). *J. clin. Invest.*, **18**, 603.
Macfarlane, R. G., and Mole, R. H. (1942). Personal communication.
Nygaard, K. K. (1941). *Hemorrhagic Diseases*, St. Louis.
Owen, T. K., and Toohey, M. (1941). *Lancet*, **1**, 724.
Pohle, F. J., and Stewart, J. K. (1939). *Amer. J. med. Sci.*, **198**, 622.
Quick, A. J. (1936). *Amer. J. Physiol.*, **115**, 317.
—— (1937). Ibid., **118**, 260.
—— (1939). *Pennsylvania med. J.*, **43**, 125.
Witts, L. J., and Hobson, F. C. G. (1940). *British Medical Journal*, **2**, 862.
—— —— (1941). Ibid., **1**, 170.

Sixty per cent. of India's medical stores are now made in India as compared with 25% at the beginning of the war. Instrument manufacturers have expanded their works and increased their production, and only such instruments as cystoscopes, microscopes, etc., need be imported. A number of medicinal items have recently been taken off the list of importations, also certain bacteriological stains which are now prepared by the distillation of ordinary commercial and crude dyes. The rubber industry has widened its range of products so that it is now possible to obtain a large percentage of the appliances necessary in hospital.

PERINEURITIS

BY

JAMES CYRIAX, M.D.

Assistant Medical Officer, Physiotherapeutic Department, St. Thomas's Hospital

In the diagnostic sphere the territories of the neurologist and the physiotherapist overlap at one point—in the elucidation of some of the diffuse pains so often spoken of by the patient as "neuritis." Many, probably most, patients complaining of "neuritis" are suffering from referred pain clearly demonstrable as taking origin from a deeply situated somatic tissue. Other patients with this complaint are found to have some disease of the nervous system. Evidence has, however, been accumulating that cases occur in which, despite the presence of unimpaired conduction along a nerve, the pain originates in a nerve. Such pain is not the lancinating stab of neuralgia but a continuous burning ache closely resembling that caused by severe inflammation of such structures as muscle, tendon, joint capsule, etc. In these cases the following criteria are satisfied: (1) no pain can be elicited from the muscles, joints, etc., comprising the same group of segments as the painful part; (2) conduction along the nervous system is normal; (3) the pain is referred to a region obviously corresponding accurately to the area of cutaneous supply of a peripheral nerve. The conclusion is then inescapable that the pain arises in a nerve but not in its conducting elements. In other words, it is the nerve sheath that is inflamed—perineuritis.

Theoretical Considerations

Since the inflamed structure in perineuritis is a fibrous sheath, the quality of the pain resembles that of fibrositis of muscles and similar tissues. It is in its mode of reference that it differs: for not only does the region in which the pain is felt correspond with a known cutaneous area, but the patient can tell whether the front or the back, say, of the finger is affected. In fibrositis of other structures the pain is usually felt right inside the part. Though at first sight it may appear unlikely, symptoms due to perineuritis are often brought on by using the painful member. This can be demonstrated by a simple experiment. The subject sits on the edge of a chair in the manner known to cause pressure on the sciatic nerve in the upper thigh. When paraesthesiae can be felt in the foot, the subject, keeping otherwise perfectly still, voluntarily flexes his toes. This at once increases the pain, though the movement in no way alters the tension on the affected part of the nerve trunk. Hence, though the cause of this phenomenon is obscure, a complaint of pain brought on or aggravated by exercise does not preclude perineuritis.

Secondary parenchymatous change may occur in perineuritis, presumably because of the pressure exerted by the swollen sheath on the nerve fibres. In sciatic perineuritis this occurred in 10 cases out of 18, and showed itself by wasting of the gluteal muscles and by incomplete ability to contract them voluntarily, wasting of the hamstrings, and loss of the ankle-jerk. When these neurological signs appear the label "sciatic neuritis" would seem warranted, but this name leads to an error in emphasis, focusing attention upon the secondary rather than the primary organic process.

In these figures of proved cases of sciatic perineuritis lies the answer to the school of thought that would confine the use of the term "sciatica" to sciatic neuritis. Since roughly half of all cases of sciatic perineuritis show no evidence of loss of conduction along the nerve, this limitation results in the indefensible position in which some, but not other, cases of sciatic perineuritis are called "sciatica." Moreover, a few patients with perineuritis complain only of backache: this raises the question whether that symptom, if of sciatic periradicular origin, can be called sciatica. The alternative, and to my mind better, course is to retain the word sciatica—well known to the public—as the name of a common symptom, like headache. A medical definition compatible with this use of the word would then be: "A

diffuse pain characterizing some lesions situated in the proximal parts of the fourth lumbar to second sacral segments." For the layman the definition would be: "A pain felt to run down the lower limb from above."

Confirmation by Local Anaesthesia.—All diagnoses of perineuritis are speculative, and no case can be considered such until confirmation by local anaesthesia has been carried out successfully. The affected part of the nerve sheath is infiltrated with a procaine solution, whereupon the pain disappears at once for the duration of anaesthesia. Only cases in which this test showed the diagnosis to be correct are cited here. Direct injection about the nerve sheath was employed in each instance except that of the sciatic nerve, whose roots were anaesthetized epidurally via the sacral hiatus.

Types of Perineuritis.—Perineuritis may be set up by friction; this variety is well recognized. It is the perineuritis due to inflammation of unknown origin, and therefore called "rheumatic," that causes difficulty in diagnosis.

Friction Perineuritis

Little need be said about this familiar variety. Whereas prolonged or severe pressure on a nerve results in traumatic palsy, intermittent pressure—i.e., friction—sets up perineuritis at first. The common cause of this type of irritation of a nerve sheath is pressure against a skeletal projection. This may be a cervical rib, a protruded lumbar intervertebral disk, an osteoma (e.g., of the head of the fibula), or a cubitus valgus deformity. The lateral cutaneous nerve of the thigh may be pressed upon by the edge of the foramen by which it pierces the fascia lata (meralgia). Patients may unwittingly subject a nerve to intermittent pressure of postural origin (e.g., by sitting cross-legged or by keeping the elbow in full flexion). Tumours may stretch or invade a nerve, but do not fall within the scope of the physiotherapist. If perineuritis due to friction is not relieved, progress to a true neuritis in course of time is certain.

Rheumatic Perineuritis

This group comprises those cases in which no cause for the inflammation is detectable. The nerves most often affected are the facial and the sciatic, but ulnar, median, musculospiral, and external popliteal perineuritis also occur.

Facial Perineuritis.—The swelling of the nerve sheath in its bony canal leads to a secondary pressure palsy and thus to paralysis of the facial musculature. Since the nerve is purely motor, premonitory pain is absent.

Rheumatic Perineuritis in the Upper Limb

Ulnar Perineuritis.—The pain is felt chiefly at the ulnar border of the hand and in the little, ring, and middle fingers. There may be some discomfort at the elbow. In 2 particularly severe cases the pain was felt to extend from the base of the neck to the fingers; yet the whole symptom was completely abolished by infiltration with a procaine solution of a stretch of nerve sheath at the elbow one inch long, no peripheral anaesthesia being thus produced. Previous examination by a neurologist had shown conduction along the nerve to be normal. The sheath was inflamed at the elbow in all the cases that I have seen. Postures involving prolonged flexion at the elbow (e.g., lying supine with the hands under the occiput) may provoke perineuritis here, as may the altered stress on the nerve caused by malunion of a condylar fracture of the humerus. Recurrent dislocation of the ulnar nerve often leads at first to perineuritis; in addition to pain, the patient then complains of something going "out and in" at the elbow. In other cases no reason can be found.

Median Perineuritis.—The chief pain is in the thumb, but the fact that it also extends to the palmar surface of the two adjacent fingers should immediately arouse suspicion. In a case of 4 years' duration two operations had been performed on the thumb in the vain search for a foreign body. Contrary to expectation simultaneous extension of the wrist and elbow failed to evoke the pain. Search was made along the course of the median nerve in the forearm for a spot pressure on which set up the pain in the thumb. In 3 proved cases these spots were found at the wrist, and 2 inches and 5 inches above it, respectively.

Musculospiral Perineuritis.—Of this condition only 2 examples have come my way. There was severe and constant pain stretching from the base of the neck to the radial side of the hand. The only localizing sign was a marked paresis of the triceps muscle. This finding led to an examination for tenderness along the course of the musculospiral trunk in the arm; it was found where the nerve winds round the shaft of the humerus, and local anaesthesia confirmed this tentative diagnosis.

Brachial Neuritis

The preceding condition is one of the few in my experience that merit the label "brachial neuritis"; for in addition to the pain originating in the nerve sheath there was evidence of loss of conduction. Even so, a diagnosis of musculospiral perineuritis would be more accurately descriptive. I have seen 3 other cases in which pain arose, apparently spontaneously, at the root of the neck and in the arm; a week later paresis of the deltoid, supraspinatus, and biceps muscles was apparent. To these cases the label "brachial neuritis" might also be applied, but again the localization of the lesion to the fifth and sixth cervical roots suggests that "brachial" is an unnecessarily wide term. These cases are mentioned in order to suggest that increased accuracy in diagnosis may render "brachial neuritis" a term of very rare and restricted application.

Rheumatic Perineuritis in the Lower Limb

When perineuritis affects the upper limb, stretching its nerves does not always evoke the pain. On the other hand, stretching the nerve regularly gives rise to pain in the two perineuritic conditions familiar to me as affecting the lower limb. These are sciatic and external popliteal perineuritis, for each of which a pathognomonic test exists.

External Popliteal Perineuritis.—The pain is usually felt at the outer side of the shin and foot, but in severe cases it may extend from the region of the greater trochanter to the toes. The test for the nerve is as follows. While the knee is kept extended the foot is fully dorsiflexed: this causes no pain. The foot is then fully inverted: this hurts. While the position of the foot is maintained the knee is allowed to flex a little. If the pain disappears the nerve is at fault. In every case the sheath proved to be affected where it winds about the head and neck of the fibula.

Sciatic Perineuritis.—The history is of unilateral pain first felt in the lower back, then spreading to the buttock, thigh, leg, and foot. Exceptionally, only a complaint of backache is made. In the acute stage the pain is continuous and severe; in the subacute stage there is a constant ache aggravated by all movements that stretch the nerve (e.g., standing trunk-flexion); in the chronic stage there is pain only on such movements. An asymmetrical posture designed to take all possible tension off the nerve roots is adopted in all but mild cases; sciatic perineuritis is a common cause of "sciatic scoliosis." Secondary parenchymatous change occurs in about half the cases; this shows itself by wasting of the gluteal and hamstring muscles, and by loss of the ankle-jerk. This reflex, once thus lost, does not return even after the patient has been well for some years. Taken alone, loss of the ankle-jerk, even on the affected side only, is not much to go by; for not only may it be present in sciatic perineuritis, but it may be unaccountably absent in cases in which the pain can be shown not to originate in a nerve.

Head-and-Knee Test for Sciatic Perineuritis.—This is carried out as follows: The patient sits; his trunk and thigh remain motionless throughout. The leg is passively extended at the knee until the pain just starts. It is then allowed to flex a very short distance until the pain just goes. The patient now drops his chin on to his chest. This brings the pain on again. The knee is then allowed to flex a little more. Disappearance of the pain shows the sciatic nerve to be at fault. The principle behind this test is that a tension created by a flexion movement of the neck is released by a flexion movement at the knee. This would be possible only for a structure continuous from neck to leg: there exists but one such—the spinal cord and its continuation, the sciatic nerve. Pain on straight-leg raising, which stretches every posterior structure in the thigh, buttock, and lumbar region, does not indicate that the lesion necessarily lies in the sciatic nerve.

Signs Suggesting Frictional Sciatic Perineuritis

At times it is possible to be fairly certain when the patient is first seen that protrusion of a lower lumbar intervertebral disk has occurred. Clearly, the factors set out below suggest this *only when they supplement the signs of sciatic perineuritis.*

1. *The Length of History.*—Non-frictional sciatic perineuritis usually gets well of itself in 8 to 12 months. Hence a history lasting for over a year is suggestive.

2. *Signs of Nervous Disease in the Leg.*—When to the signs of sciatic perineuritis are added weakness of the dorsiflexor muscles of the foot, particularly of the extensor longus hallucis, and/or impairment of sensation in the skin of the outer side of the leg or foot, the presence of a protruded disk is highly probable. Absence of ankle-jerk, gluteal wasting, and postural deformity are common to both idiopathic and frictional perineuritis and thus throw no light on the problem. So far I have come across one case in which pressure from a protruded disk had led to a marked paresis of the dorsiflexor muscles in the leg without affecting the amplitude of the ankle-jerk, although the time interval between the tap and the response was considerably increased.

3. *Great Pain on Epidural Infiltration.*—This sign was pointed out by Love in 1936. If the pain is such that the patient has to ask for the discontinuance of the injection, the presence of a spinal block is likely. The converse does not hold; for patients found later to have a protrusion have tolerated the injection well.

4. *Failure to Improve after Epidural Infiltration.*—Whether idiopathic or frictional in origin, the pain of sciatic perineuritis and the range of straight-leg raising improve markedly during the hour or so after the injection. Occasionally the result is dramatic, and the standing patient may bend and touch his toes painlessly after having been unable to reach beyond his knees for months. If there is no immediate improvement the diagnosis of sciatic perineuritis is probably wrong. If when seen a week later he is no better, it is my practice to repeat the injection. If when seen at the end of another week the improvement is again found to have been transitory, the inference is drawn that a protrusion exists.

5. *Sudden Disappearance of the Whole Syndrome.*—Patients suffering from protrusion of a disk sometimes give a history of having had and having fully recovered from the same condition in the past. Spontaneous reduction of a protruded disk may occur, therefore. One such case—as yet unproved—has come my way. The patient's history was of five months' severe sciatica, which disappeared overnight the day before he attended. Full straight-leg raising caused no discomfort, but unilateral absence of the ankle-jerk and gluteal wasting were evident. In my experience untreated idiopathic sciatic perineuritis has always got better very slowly; hence reduction of a protruded disk is the probable explanation.

Signs of Perineuritis

A summary of the facts outlined above shows that the signs fall into five groups, but are seldom all present in any one case. It is noticeable that the nerve sheath is nearly always affected where it lies in close contact with bone. This raises the question whether there is not some slight frictional element in even "rheumatic" perineuritis.

Pain on Stretching the Nerve.—This is the outstanding sign when perineuritis affects the lower limb. The whole brachial plexus can be stretched by abducting the arm to 60 degrees and applying traction to the hand while the neck is bent fully to the opposite side. Pain can usually be elicited in brachial perineuritis by this means, but the vertebro-scapular muscles are also tautened thereby; they too are not uncommon sources of pain felt to radiate along the whole upper limb. Thus no certain test can be devised for the upper limb.

Tenderness and Swelling of the Nerve Sheath.—Both these signs are presumably present in every case. Except for the sciatic nerve roots, tenderness of the nerve trunk is readily found, and pressure at this point reproduces the distant pain. Swelling of the nerve has been palpable only of the ulnar nerve at the humeral condyle.

Postural Deformity.—In sciatic perineuritis that is at all severe, lateral curvature of the lumbar spine associated with little or no rotation develops from the adoption of the posture best calculated to take all tension off the nerve. Together with this, the ability to bend the trunk forwards from the upright position all but disappears. Cubitus valgus, whether developmental or the result of malunion of a fracture near the elbow, is often associated with ulnar perineuritis. Gross osteophyte formation may cause pressure on the external popliteal nerve at the knee.

Evidence of Secondary Parenchymatous Change.—Perineuritis may progress to neuritis if the swelling of the nerve sheath exerts pressure on the conducting fibres. In the case of the facial nerve it is only when palsy supervenes that the condition becomes apparent at all. Correct attribution of the early symptoms to perineuritis may be assumed when signs of neuritis appear later and are diagnostic of pressure on a part of the peripheral nervous system.

Cessation of Symptoms for the Duration of Local Anaesthesia.—This is the only sure method of confirming what can only be a more or less tentative diagnosis. If this is correct, and the anaesthetic solution reaches the nerve sheath, relief is achieved within a minute or two, and lasts for about an hour and a half.

Treatment of Perineuritis

First employed as a method of corroborating a diagnosis, local anaesthesia was soon found by experience to be an excellent method of treatment. When the pain due to the return of perception to the nerve sheath had worn off, marked symptomatic improvement was reported in almost every case. Two, or at the most three, infiltrations spaced at weekly or fortnightly intervals have afforded full relief. So reliable is this treatment that if primary cessation of pain is not followed by secondary alleviation the presence of an unsuspected frictional cause is suggested.

Direct action of the procaine on the nerve sheath appears to be the way relief is obtained. Alternatively, distension with fluid of the space between the nerve and the tissues round it might be responsible. If this were so, the effect would presumably be obtained by separation of adhesions about the sheath by hydraulic pressure. In the case of the sciatic nerve this object would also be attained by stretching under general anaesthesia; but this procedure makes the patient much worse in acute or subacute sciatic perineuritis. Since, then, mobilization of the nerve is not responsible, the view that procaine initiates a lasting effect on nerve sheaths is the more probable hypothesis. In my experience no treatment other than the induction of local anaesthesia of the nerve sheath is effective. Heat has proved valueless and massage harmful.

Illustrative Case

A girl cut the inner side of her left elbow at the age of 10; the wound healed and was forgotten. At the age of 20 pain began to be felt in the inner side of the hand, and anterior transposition of the ulnar nerve was performed. Relief lasted 4 years; the symptoms then returned, getting gradually worse until severe continuous pain extended from the base of the neck to the ulnar fingers. Infiltration of the transposed ulnar nerve sheath at the elbow led on several occasions to complete relief, lasting as long as a fortnight. Then, however, the pain returned and was soon as bad as ever. The conclusion reached was that recurrence was due to the nerve's being bound down mechanically, and open mobilization finally became necessary. At the operation the ulnar nerve was found bound down by a thick scar to the front of the medial humeral condyle, and by the next day all the pain had gone. There can be no doubt that the pain arose in the ulnar nerve, yet at no time did investigation in the neurological department reveal any loss of conduction, in spite of the severity of the symptoms and the length of history. I believe that it is to this type of case, when the perineuritis is acute enough to cause pain referred both up and down the limb, that the term "brachial neuritis" or even "causalgia" is sometimes applied, and that it is then an unnecessarily wide term.

G. Wiberg (*Nord. Med.*, 1941, **10**, 1929), who records his observations on twenty-three cases of de Quervain's tenosynovitis stenosans, discusses the possibility of a connexion between trauma and this condition. In individual cases such a connexion seems to be forthcoming, but a clear proof of a former injury to the wrist-joint is required in the form of damage to the tendons of the extensor pollicis brevis or abductor pollicis longus as occurs in an open wound, or the discovery at operation of a definite sign of an old tendon lesion, or a scar corresponding to the tendons of extensor pollicis brevis or abductor pollicis longus in their course over the styloid process of the radius.

MASSIVE BLOOD LOSS: RECOVERY

BY

STANLEY WAY, M.R.C.O.G.

AND

FRANK ROBERTSON, M.D.

(From the Departments of Obstetrics and Gynaecology and of Medicine, Medical School, King's College, Newcastle-upon-Tyne)

The following is the record of a case of ruptured uterus which required 3 laparotomies and transfusion of 11 pints of blood in the course of 15 hours.

Case Report

The patient, a 4-gravida aged 24, was 40 weeks pregnant when she was admitted to the Princess Mary Maternity Hospital, Newcastle-upon-Tyne, at 10.15 p.m. on Oct. 3, 1941, as a case of toxic ante-partum haemorrhage. In 1938 she had had one miscarriage, for which curettage was performed. Later in 1938 she was delivered of a live baby (breech delivery). In 1939 a further miscarriage occurred, and she was curetted while she had a temperature of 102° F.

The history of the present pregnancy was that she was healthy until 2 weeks before delivery, when she had a slight vaginal haemorrhage and stayed in bed. The haemorrhage restarted and she was sent to hospital. Shortly after admission pains began. The house-surgeon suggested a diagnosis of accidental haemorrhage, and the membranes were ruptured and a tight binder applied. There was no oedema or albuminuria. B.P. 134/88. Os two fingers patent. She was extremely violent all night.

At 6.20 a.m. on Oct. 4 the patient suddenly collapsed and was seen by one of us (S. W.) at 6.30 a.m. She was a well-built woman, icy cold and colourless, and was lying motionless. Breathing was very shallow and she was not sweating. No radial or carotid pulse could be felt on either side. The B.P. could not be estimated. The foetal parts were easily felt, and a diagnosis of ruptured uterus was made. Blood transfusion was begun. At 7.30 a.m. the B.P. was 55/30, the Hb 45%, and the pulse perceptible at the wrist but uncountable. One pint of blood was given.

During the next 4 hours a blood drip was maintained: the B.P. rose to 84/70, and the pulse became of better volume, the rate falling to 120. We had hoped for greater improvement before operation, but at 11 a.m. it was noticed that the B.P. was beginning to fall and the pulse rate to rise. The falling B.P. and rising pulse continued until, at 11.30 a.m., the patient was very ill again and obviously deteriorating. It was decided that serious internal haemorrhage was occurring and that unless it was arrested she would die. The abdomen was therefore opened under local anaesthesia. When the peritoneum was incised a great fountain of blood shot out. This can only be compared to opening an abdomen full of ascitic fluid. About 8 pints of blood was collected in buckets. The uterus was ruptured through the fundus and there was considerable haemorrhage from the torn left ovarian vessels. One leg of the foetus protruded through the rent. The foetus was delivered without enlarging the tear and a rapid subtotal hysterectomy completed. The total operating time was 11 minutes, and throughout the operation blood was run in by gravity as fast as possible. After the operation a dramatic improvement occurred. The B.P. rose at 2 p.m. to 110/74, the pulse rate fell to 130, and the patient looked fit. Transfusion of blood was stopped at 2 p.m.

At 3 p.m., while the B.P. was 110/80, the pulse 120, and the Hb 50%, she complained that "something was coming away down below." This proved to be bright red blood running rapidly out of the vagina. A diagnosis of slipped ligature was made. Transfusion was restarted and under local anaesthesia the wound reopened. The left uterine artery was found to be spurting and was religatured. Operating time was 5 minutes. There was no blood in the peritoneal cavity. External blood loss was measured and found to be one pint. She was given a pint of blood.

Her condition improved, the B.P. rising to 130/80 and the pulse falling to 112 at 5.20 p.m. She then gradually got worse; the pulse rate rose steadily to 160, and the pressure gradually fell to 90/65 at 8.30 p.m.; the Hb amounted to 55%. A very slight vaginal haemorrhage had occurred at 6.15 p.m., but this had ceased. A diagnosis of further haemorrhage—possibly again from a slipped ligature, although the ligatures had previously been tested—was considered. It was felt, however, that further observations should be maintained. It was suggested that the stored blood was lacking in prothrombin, and therefore kapilon 2 c.cm. was given. As all the blood was citrated, this was investigated as a possible cause of haemorrhage. No clinical signs of tetany were discovered, however.

At 9 p.m. her condition had deteriorated; she was cold, blanched, and restless, and sighing respirations had developed. The pulse was irregular and feeble, and the B.P. was 85/65. A pelvic examination revealed a large haematoma behind the cervix. So far, despite the deterioration and the belief that haemorrhage was occurring, no further attempt at transfusion had been made, as it was hoped that, as in most cases of haematemesis, the bleeding would cease spontaneously. However, when sighing respirations had appeared it was felt that further transfusion was necessary and justifiable. A pint of blood was run in in half an hour. This brought about some improvement, and at 10 p.m. the B.P. was 90/65 and the pulse 150. It was now thought that the haemorrhage was due to a slipped ligature, and so, after the utmost deliberation and with great reluctance, it was decided to perform another laparotomy —the third in 10 hours.

At 10 p.m. the wound was reopened (S. W.) under local anaesthesia with gas, oxygen, and ether. About 2 pints of bright red blood and clot was found in the pelvis. There was a steady ooze through the sutured pelvic peritoneum. This was reopened and all the ligatures were seen to be dry and satisfactory. The ooze was coming from the cervical stump, despite the fact that this contained two large mattress sutures. Three courses were open: (1) to remove the stump of cervix—this would have been followed by an ooze from the pelvic cellular tissues, difficult to control; (2) to put a pack down to the cervix through the peritoneal cavity—this would have led to peritonitis; or (3) to marsupialize the stump and stitch it to the surface: this was done. The wound was packed with streptocide powder and a small gauze pack applied to the bare stump. Operating time was 1 hour 15 minutes, throughout which blood was given by drip.

At 11 p.m. the B.P. was 115/70 and the pulse 150, irregular, and of poor volume. The patient was, however, warm and pink. She vomited 4 oz. of bile-stained fluid. At 11.15 p.m. the B.P. was 140/70 and the Hb 80%, and her condition was fairly good. She remained warm and comfortable; the pulse fell to 110, and was of good volume throughout the night. At 12 noon on Oct. 5 the B.P. was 120/80, the pulse 110 and of good volume, and the Hb 80%. Her condition was very satisfactory. Catheterization produced 26 oz. of urine, which contained numerous red cells. Soluble prontosil 20 c.cm. was given intramuscularly. She made a steady recovery and remained apyrexial. The fistula resulting from marsupialization of the stump was treated every other day with streptocide powder and remained clean; it healed in 4 weeks.

On Oct. 20 thrombosis of the right superficial saphenous vein was noticed and the leg was immobilized. The swelling was gone by Nov. 1. The patient was discharged from hospital 32 days after operation.

As only universal blood O (IV) was stored in the blood bank, this was given—in all, 11 pints of blood and 1½ pints of plasma. This resulted in a change in the blood group of the patient from A (II) to O (IV), and it was 11 days after operation before there appeared to be some agglutination with B (III) serum. On the twelfth day she was definitely A (II) again.

Discussion

The cause of the haemorrhage on the third occasion is obscure. Several possibilities can be considered:

1. So much blood was given that the blood volume was increased, and hence haemorrhage occurred from the damaged tissue. If this were so, one would have expected an abnormal rise in blood pressure. Further, the measured quantity of blood lost was 8+1+2=11 pints, and the addition of 1½ pints of plasma seems unlikely to produce haemorrhage.

2. Prothrombin deficiency. This was thought to be possible; therefore kapilon was given. Recent work suggests, however, that the prothrombin does not decrease in stored blood until the fifth day. All the blood given was 3 days or less old.

3. Excess of citrate in the circulation. This seems unlikely, as clot was found in the peritoneum, and it was thought that there should be clinical evidence of tetany. This was sought, but none was found. No samples of blood, however, were taken to estimate the Ca or prothrombin level.

4. The fault probably lies in the failure of the capillaries to contract. This may have been due in part to the large amount of morphine (1¼ grains) given during 12 hours. One result of this morphinization is that the patient has no recollection of

the happenings or of any of the operations, although she became conscious enough at 2 p.m. to tell us of the vaginal haemorrhage.

Sections of the uterus showed the cause of the rupture to be degeneration of the uterine muscle, probably due to the fact that she was curetted in a previous pregnancy for an incomplete abortion when her temperature was 102° F.

When seen on Dec. 23 the patient was in good health. The wound was satisfactory, and the position of the cervical stump appeared normal.

Summary

A case of ruptured uterus treated by hysterectomy and blood transfusion is reported. Secondary haemorrhage occurred, and in all 11 pints of blood was used to resuscitate the patient, and the peritoneum was opened 3 times in 10 hours.

The patient's blood group was temporarily changed from A to O.

The cause of the third haemorrhage is discussed.

We wish to thank our two house-surgeons, Dr. Woll and Dr. Harrison, without whose help and attention the patient could not have survived.

ARIBOFLAVINOSIS

REPORTS OF TWO CASES

BY

GEOFFREY DUCKWORTH, M.R.C.P.

Physician, St. John's Hospital for Diseases of the Skin, London; Dermatologist, Bolingbroke Hospital, Wandsworth Common, and St. John's Hospital, Lewisham

In these days when some attention is focused on the part riboflavin plays in man's metabolism it may be of interest if cases are reported in which some, or all, of the signs of the syndrome named ariboflavinosis by Sebrell and Butler (1939) in the United States are present, and if the apparent success or failure of riboflavin therapy in such cases is noted.

In man the syndrome is said to consist of cheilosis, perlèche-like erosions, seborrhoea of the face, vascularization of cornea, and keratitis (Gross, 1941). Neither of the following cases had any eye symptoms or signs, nor were there any changes on the tongue. This organ has been described as looking clean, of a purplish-red or magenta colour, and as having had mushroom-shaped papillae (Kruse *et al.*, 1940).

Case I

An otherwise healthy girl aged 7 complained of an eruption, worse each winter, that started five years earlier. At the muco-cutaneous junction of each nostril, extending on to the mucous as well as the cutaneous surface, crusted exudation was present, mingled with some scaliness. Superficial fissuring, capped with crusts, was seen at the postero-lateral angles. A similar condition was found on the lips, where the involvement of the red part was most marked at the line of closure; but the crusting was less and the scaliness more. Bordering the muco-cutaneous junction was a strip, a fraction of an inch wide, consisting of roughened and slightly erythematous skin, covered with fine scales. Oedema was slight. The angles were swollen, corrugated, and superficially fissured. An erythemato-squamous condition extended along both naso-labial furrows and their borders. The entrances to the external auditory meatus were conspicuously scaly. In addition the child had irregularly shaped erythemato-squamous patches on the sides and front of the neck, and lichenified eczema of the bends of the elbows. The skin of the rest of the body was of normal appearance. The patches on the neck and in front of the elbows had sometimes wept; those on the face had been dry. Slight bleeding occurred at the fissures when they were irritated. Internal examination of the nose did not reveal any abnormality or disease.

In treating the case, soap was restricted quantitatively and only a superfatted variety was allowed. Advice was given that the skin should be carefully mopped dry, especially in windy and cold weather. Internally, riboflavin was given in 4-mg. doses daily. Nicotinic acid, 50 mg. t.d.s., was given also during the earlier part of the treatment. Externally, a paste containing weak concentrations of tar and ammoniated mercury, with bismuth carbonate, was used.

When seen a fortnight later the signs of ariboflavinosis had vanished. The patches on the neck were less conspicuous, and those in front of the elbows had made some progress towards healing. A month later the face was still normal, the neck showed a little dryness and desquamation, and the elbows were a step nearer healing.

Case II

The second case was that of a woman aged 44, a munition worker, who complained of sore lips and an itchiness of the skin along the naso-labial furrows. She was depressed mentally, but could not account for it. The menses were normal. The trouble, which had started several months earlier—she could not remember when exactly—waxed and waned from time to time. On examination the lips presented a picture very similar to that seen in Case I, but in addition there was a fissure on the lower one running transversely on each side of the midline at the line of closure. This fissure was covered with a crust and bled readily on pressure. The angles of the mouth were swollen, formed into folds, and superficially fissured. The adjoining skin of the face was slightly oedematous and covered with fine scales. Only slight erythema was evident. The nostrils were affected in a way similar to the girl's, as were the naso-labial grooves also; but here the picture was more vivid. The ears had escaped.

General advice was given, as it was to the child, and nothing but riboflavin was prescribed internally. This was given in 6-mg. doses daily. Locally, an ointment of zinc oxide and boric acid was used.

When seen in three weeks' time the patient had greatly improved, but the fissuring at the corners of the mouth was still present. When seen a month later she had relapsed. She said she had not taken the tablets since the second visit because she thought it had been the ointment that had brought about the improvement in the first place. In a further three weeks' time healing was complete except for the fissuring at the angles of the mouth. She had taken the riboflavin regularly during this period.

Comment

In neither case had a carbolic tooth powder been used. Both patients had been having their full food rations, and as much in addition as possible. The child's response was particularly gratifying in view of the long history. From the point of view of finding out if the lesions disappeared on riboflavin treatment alone, it was a pity any other form of treatment was given, but in my experience such lesions on the lips and nostrils have not responded to nicotinic acid. This was given because it appears to be helpful in some cases of seborrhoeic dermatitis of the neck and face. The relapse in the woman's case seemed to disprove her belief: the improvements coincided with riboflavin therapy. The persistence of the fissures at the angles of the mouth was attributed to an obstinate infection, of a type often responsive to a weak cignolin paint.

Riboflavin appeared to hasten healing in both these instances. Cases presenting similar signs have healed in the past without it, but it is my impression that they have taken much longer in doing so. It is possible that when this has happened an increased riboflavin intake had occurred in the diet.

Questions difficult to answer arise: Why, for example, in these war days, when rationing makes our diets more nearly alike than they are in other times, should the individual show signs that disappear after taking some vitamin? Conditions in the gut will vary and influence absorption generally, and that of vitamins in particular. But the apparent answer is that individual needs may vary greatly and are dependent on the interactions of the hormones, vitamins, and autonomic nervous system.

Riboflavin is an orange-yellow crystalline substance, soluble in water, and is a condensation product of a pentose sugar, ribose, and iso-alloxazine. Before the nature of the sugar was recognized the substance was called lactoflavin, because it was first obtained from milk. It occurs naturally in many foods, specially in liver, kidney, meat, milk, butter, and egg-yolk. Yeast is a rich source of it. In smaller amounts it is found in many other foods. It is believed to act as an enzyme.

Though the foods richest in riboflavin are now restricted in this country it seems likely that the quantities available are sufficient for most people; if it were otherwise the syndrome ariboflavinosis should be more commonly seen. It has been suggested that a daily intake of about 3 mg. is adequate.

BIBLIOGRAPHY

Clark, A. J. (1940). *Applied Pharmacology*. Churchill, London.
Gross, P. (1941). *Arch. Derm. Syph.*, Chicago, **43**, 505.
Kruse, H. D., *et al.* (1940). *Publ. Hlth. Rep.*, Wash., 55, **1**, 157.
Mottram, V. H., and Graham, G. (1940). Hutchison's *Food, and the Principles of Dietetics*, Arnold, London.
Sebrell, W. H., and Butler, R. (1939). *Publ. Hlth. Rep.*, Wash., 54, **2**, 2121.

Medical Memoranda

Bilateral Strangulated Femoral Hernia

This condition is rare enough to merit publication of the following case.

CASE REPORT

The patient, a man aged 73, was an old-age pensioner. For four years he had had uncomplicated bilateral femoral hernia, for which he was wearing a truss. He had led a healthy life, but for three months had had a mild degree of constipation. There were no urinary symptoms. Four days before admission he woke up in the middle of the night to find the right-sided hernia hard, painful, and tender. A few hours later he developed colicky lower abdominal pain and began to vomit. The vomiting continued at frequent intervals until, twelve hours before admission, during an attack of retching, the left-sided hernia suddenly became hard and painful.

When examined the patient's condition was poor: he was thin and severely dehydrated; the tongue was dry, brown, and furred; the pulse regular, rate 90; the vessels tortuous and showing signs of gross atherosclerosis. His temperature was 97.9°, and blood pressure 120/90. The abdomen was moderately distended, with visible peristalsis. Both hernias were about the size of golf balls, the right being slightly larger than the left; both were tender, hard, and irreducible. Per rectum the prostate was firm but not enlarged. Before operation a nasal tube was passed and four pints of foul faecal vomit were aspirated.

Operation.—Anaesthetic: 12 c.cm. of hypobaric percaine with 1 c.cm. of intramuscular veritol. The hernial sac on the right side contained a loop of small bowel, which was dull and dark purple in colour. At the constriction ring its colour was grey. Considerable doubts were felt as to its viability; but it was thought that the risks of resection were greater than those of subsequent perforation, and it was consequently returned to the peritoneal cavity. On the left side the loop of small bowel was strangulated but obviously viable. Radical cure on both sides was effected by Parry's method.

At the end of the operation the patient's condition was poor; the nasal tube was retained *in situ* and aspirated at frequent intervals. An intravenous glucose–saline drip was instituted, the patient receiving three pints in the next twenty-four hours. After this his condition improved; the drip was discontinued and the nasal tube withdrawn. From that time he made an uninterrupted recovery; his bowels were opened on the fourth day, and he was discharged to a convalescent hospital on the twelfth day after operation.

My thanks are due to Mr. John Gilmour for permission to publish this case.

J. D. T. JONES, M.B., B.S., F.R.C.S.Ed.,
Surgical Registrar, Royal Victoria Infirmary.
Newcastle-upon-Tyne.

Reviews

THE INJURED BACK

The Injured Back and its Treatment. Edited by John D. Ellis, M.D. (Pp. 377; illustrated. 30s.) London: Baillière, Tindall and Cox.

This book consists of a series of papers written independently by various authors on one of the most difficult and controversial aspects of modern orthopaedic practice. Sir Arthur Keith contributes an introductory note on the evolution of man's posture. The remainder of the book maintains the same high standard. The authors are all recognized authorities in their particular field. The editor, John D. Ellis, contributes chapters on the routine examination of the injured back, on the relation of trauma to inflammatory and degenerative disease and anomalies of the spine, and on the treatment of minor injuries. Ghormley contributes a chapter on the role of the articular facets in low back pain. Osgood provides an excellent chapter on the relation of faulty body mechanics to back injuries. Neurosurgical aspects of injuries to the back are covered by Loyal Davis and Haven. The problem of backache referred from visceral disease is dealt with by Nathan S. Davis and the management of fractures of the spine by Conwell. Ellis writes: "It is unquestionably a delusion for the examiner to believe, as one is likely to do early in his experience with the study of injured backs, that all patients grossly exaggerate their symptoms or that the complaint of soreness in the back is to a large extent neurasthenic and has no physical basis."

This book is an attempt to differentiate the various types of backache and establish their relation to injury. A commendable feature is the stress laid on considerations of anatomy and pathology, which form the basis of any proper assessment of clinical findings and the basis of any useful rationale of treatment. The whole subject is covered in detail and modern investigations are reviewed most carefully. The bibliography at the end of each chapter is most comprehensive, and this alone makes it a useful book of reference. The reproductions of all *x*-rays are unusually good, especially those of the intervertebral articulations.

It is pleasing to note that operative procedures are relegated to their proper place and are considered only in relation to the more conservative methods of treatment. "Shot-gun" procedures are condemned, and Ghormley says wisely: "One should never be driven to surgical treatment only because conservative methods have failed."

This book should commend itself to all physicians and orthopaedic surgeons who become exasperated over the diagnosis and treatment of low backache and sciatica. It certainly does not solve all the difficulties so frequent in the management of such cases, but it provides a highly informative and stimulating approach to the subject.

PETTENKOFER AS HYGIENIST

The Value of Health to a City. By Max von Pettenkofer. Two Lectures delivered in 1873. Translated from the German, with an Introduction, by Henry E. Sigerist. (Pp. 52. $1.00.) Maryland: The Johns Hopkins Press. 1941.

Max von Pettenkofer, who was called to the chair of hygiene at Munich in 1865, was one of the great in his day. In his own domain he was a pioneer, but he also employed his vigorous mind in an edifying diversity of other fields. He explored the hygienic significance of clothing, nutrition, pure air, ventilation, and housing. With C. Voit he carried out a classical investigation of metabolism in respiration. A process for carbon dioxide determination and a test for the bile acids still bear his name. He invented a new amalgam for dentistry, improved the gold assay for coinage, and devised a method for the renovation of paintings. In addition, he ranks as an early exponent of the economics of hygiene. In the two popular lectures entitled *The Value of Health to a City*, which he delivered at Munich in 1873, he estimated that the cost of treatment in sickness, together with the coincident loss of wages through incapacity for work, occasioned an annual loss to the city of Munich of over three million gulden. He took the view that public health measures which could reduce or abolish such losses had a cash value to correspond. This concept of the "currency equivalent" has fitted in well with the practical bent of United States administrators, and it is appropriate that a new translation of

the two lectures referred to should emanate from an American source.

The translation, with a useful introduction by the translator, is clear and unpretentious. At this time when international discord has again burst out in slaughter the English reader will note, with mingled feelings, Pettenkofer's cordial appreciation of this country. London, "that gigantic city," with its death rate of 22 per thousand was chosen by him as a model for Munich with its death rate of 33 per thousand, and he outlined a public health policy which, he thought, if persevered in, would bring the Munich death rate down to vie with that of London. In 1901, the year of his death, that dream came true.

A STUDY OF PSYCHOPATHS

The Mask of Sanity. An Attempt to Reinterpret the So-called Psychopathic Personality. By Hervey Cleckley, B.S., M.D., Professor of Neuropsychiatry, University of Georgia School of Medicine. (Pp. 298. 15s.) London: Henry Kimpton. 1941.

In very lively and vigorous prose Prof. Cleckley describes the careers of a specially selected group of psychopaths. Irretrievable ne'er-do-wells, throughout their lives they drank, squandered their resources, sabotaged their opportunities, sponged and cheated, and, as of set purpose, repeatedly involved themselves and their families in the most painful and humiliating situations. In many parts the book is more entertaining than any novel. Some of the exploits described are really amazing—lying drunk on the high altar, spitting on the birthday cake at a formal party, securing admission to a cage in a dog hospital and sending for the professor for him to see how his research student had gone to the dogs. In the Federal hospital, where they usually came only to escape the worst consequences of their scrapes, these men showed themselves bland, complacent, plausible, full of fine professions; they held up, as it were, a mask of sanity, behind which lurked something very different.

Prof. Cleckley has made the attempt to remove the mask and analyse the mind behind it, but the analytical part of his work is not so satisfactory as the descriptive. He compares these psychopaths in turn with the psychotic, neurotic, defective, criminal, the everyday drinker, with the subject of organic brain disease, and finds only some resemblance to the last. He has omitted comparison with the hysteric, with whom these characters have much in common. He rejects "the futile viewpoint indicated by merely postulating an imaginary constitutional inferiority," and seeks for the aetiology in psychogenesis and early maladjustments. This complete negation of any constitutional aspect is out of date, and Prof. Cleckley has not considered what possibly fruitful lines of investigation would be opened up by taking it into account. Working with a very similar clinical material von Baeyer, in *Zur Genealogie psychopathologischer Schwindler und Lueger* (Leipzig, 1935) made important and illuminating observations on the constitutional basis of psychopathy. Prof. Cleckley has taken one pattern out of the kaleidoscope of personality deviations and exalted it to a syndrome, from the psychopathological point of view an insidious process of "semantic dementia." In this view it is not easy to follow him.

Notes on Books

A second edition of the *Textbook of Medical Treatment*, by various authors, edited by Profs. D. M. DUNLOP, L. S. P. DAVIDSON, and J. W. MCNEE, has now been published at 25s. by E. and S. Livingstone of Edinburgh. This admirable textbook has evidently established its popularity quite quickly. First published in June, 1939, it was reprinted with some additions in 1940. The second edition has been completely revised, especially where this was indicated by the rapid advance of sulphonamide therapy in so many directions. Other sections that have been partially rewritten are those on diseases of the mouth and oxygen therapy. Where possible English equivalents have been substituted for German preparations now not available. The editors have wisely decided not to attempt to adapt their dietetic prescriptions to wartime rationing, since this is always fluctuating and temporary. There can be little doubt that this book will continue to have the success it deserves.

The two sections of Truman and Knightley's handbook *Schools: 1942* which will be found most generally useful are the directory of schools in Great Britain, arranged in order of their counties and towns, and the Evacuation Supplement, classified on the same plan and giving the present address of each school which has evacuated. Copies may be had from 61, Conduit Street, W.1, price 3s., plus 7d. postage or 1s. abroad.

Surg. Rear-Adml. C. M. BEADNELL'S *Dictionary of Scientific Terms* (London: Watts and Co. Ltd., 2s.) appears in a revised second edition. It has been amplified by a supplementary list of words and expressions which brings up to date a pocket-book of reference that appeals because of its compact and comprehensive character.

Preparations and Appliances

A NEW ADAPTATION OF THE CLOVER INHALER

Dr. E. ROLAND WILLIAMS (Clynderwen, Pembrokeshire) writes:

Nowadays the popularity of the Clover inhaler has waned considerably. Used as Clover originally designed it, this inhaler has the great drawback of being cumbrous, and it is a wearisome business to keep the combined face-piece, metal ether chamber, and bag applied to the patient's face throughout a long administration. A simple adaptation, similar to that in use in most forms of gas–oxygen apparatus, converts a Clover inhaler into a portable anaesthetic apparatus of great handiness and versatility.

In the apparatus here described (Fig. 1) the body of the inhaler has been fitted with a light metal carrier and clamp that enable it to be attached to the end of an operating table, the rail of an anaesthetic trolley, the head-piece of an examining couch, a

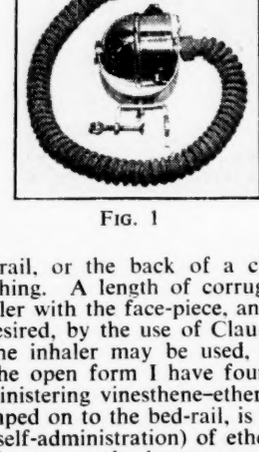

FIG. 1

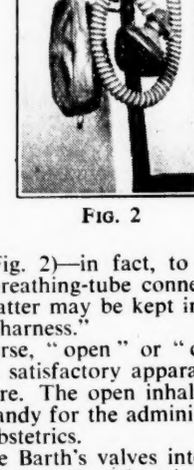

FIG. 2

bed-rail, or the back of a chair (Fig. 2)—in fact, to almost anything. A length of corrugated breathing-tube connects the inhaler with the face-piece, and the latter may be kept in place, if desired, by the use of Clausen's "harness."

The inhaler may be used, of course, "open" or "closed." In the open form I have found it a satisfactory apparatus for administering vinesthene–ether mixture. The open inhaler, too, clamped on to the bed-rail, is very handy for the administration (or self-administration) of ether in obstetrics.

The tap on the bag-mount and the Barth's valves interposed between the face-piece and the breathing-tube adapt it for use with gas-and-oxygen. The rebreathing bag can be "cut out" by rotating the tap-mount through a quarter-circle.

It has been found particularly economical and satisfactory to induce anaesthesia with gas and oxygen and then maintain it with ether by the Clover method. In that way, gas and oxygen is not used as a "vehicle" for what usually turns out to be, in essence, an ether anaesthesia expensively but conveniently administered.

[Since taking the photographs it has been found advantageous to shorten the breathing-tube to two-thirds of the length illustrated.]

COMPOUND VITAMIN TABLETS

Roche Products Ltd. are now selling "benerva" compound vitamin tablets, each of which contains 1 mg. aneurin (vitamin B_1), 1 mg. riboflavin, and 15 mg. nicotinic acid. The dose recommended is 1 tablet daily for prophylaxis and 4 to 6 tablets for treatment. Deficiency in riboflavin, which normally is obtained from milk and from meat and eggs as well as from bread and potatoes, is likely to occur in these times, and indeed is stated by some to be fairly widespread. The deficiency shows itself as vascularization of the edge of the cornea, gradually moving to the centre and becoming a keratitis. The ordinary requirement of riboflavin is 2 mg. daily, and in respect of this and the other constituents the tablets should be satisfactory. It is refreshing to find tablets of this kind prepared with adequate but not excessive doses.

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY MAY 9 1942

THE FUTURE OF MEDICAL PRACTICE

A discussion on the future of hospitals which took place in the House of Commons on April 21 revealed a fair measure of agreement as to the need for regionalization, but there was some difference of opinion about the part which voluntary hospitals should take in any future schemes. Probably most supporters of the voluntary system would agree at least that the freedom of trustees to erect new hospitals or of managers to expand existing hospitals must be limited if a planned and coherent service is to be attained. In welcoming, as they do, the Government's assurance, repeated by the Minister of Health during the debate, that its aim is a true partnership between the voluntary hospitals and the local authorities, they no doubt recognize that deeds of partnership are drawn up in terms satisfactory and binding to both parties and contain obligations as well as rights and privileges. The Minister's pronouncements make it clear that the Government's intention is to place the duty on the major local authorities of securing an adequate hospital service for their areas. If the proposals were to stop there, an authority which determined to have no dealings with voluntary hospitals, or which came face to face with managers demanding monetary aid but refusing to yield anything of their independence, might decide to disregard them and launch its own schemes of building. As the law stands at present there is nothing to prevent such action except the Minister's power of refusing sanction to borrow money, and it is doubtful if sanction would be withheld if the need for more beds were demonstrable. It must be assumed, however, that the Government, after receiving the reports of the surveyors it has appointed to consider hospital problems over wide areas, will introduce legislation designed to bring to an end undue separatism and give to a central department adequate power to see that its will is carried out. Short of confiscation of voluntary hospitals by the State, it is apparent that co-ordination can best be attained by the creation of new bodies exercising some measure of control over all hospital policy in areas of suitable size, on which voluntary hospitals and local authorities will both figure. If it is proposed at the same time to extend to dependants of insured persons and others of like income a service resembling the present medical benefit of health insurance, to bring general practitioners into closer contact with one another, with hospitals, and with the public health organization, and also to provide for consultation, specialist diagnosis and treatment, and laboratory and other ancillary aids, the case for the scrutiny of these services by the same body as exercises it for hospitals is incontrovertible, and the need for medical representation on such a body is obvious.

Elsewhere in this issue Lord Dawson traces the evolution of State medicine, the growth of a gulf between prevention and cure, and the growing appreciation of the need for bridging it. He shows that, although the 1920 proposals for planned organization by the Consultative Council on Medical and Allied Services failed to bear fruit, nevertheless the centre of gravity of practice has tended since then to move away from the home to organized surgeries, clinics, health centres, and hospitals. The care of the child's health is a public responsibility till he leaves school, but the adolescent in employment is neglected till he falls ill unless he happens to work with one of the comparatively few firms having a medical, nursing, and welfare establishment. The time is ripe for making experiments in bringing together these services within a fold which embraces also the voluntary hospitals and agencies, the municipal hospitals, and the family doctor, whose ministrations are first required when health gives place to disease. Lord Dawson looks to regionalization as affording a medium in which the 1920 scheme of primary, secondary, special, and teaching hospitals in organic association with one another would take effect. He recognizes the advantage of vesting executive and financial powers in a regional council, so creating unity of command, but foresees the probability of friction with the major local authorities—and, he might have added, with voluntary hospital managers. On the whole he thinks it would be better, in the first instance, to make regional councils advisory, provided that they must be consulted and shall have power to appeal to a central authority if their advice is rejected. In their deliberations they would be helped by medical committees. Although thus cautious in his proposals not to encroach too far on the province of local authorities, Lord Dawson gives some commendation to the much bolder and more controversial plan of creating new, semi-autonomous, non-elective bodies for regions, resembling in constitution those which have been set up for radio-activity, broadcasting, and electricity. As to finance, he thinks that payment for services received is right, but that contributory schemes are likely to give place to a nation-wide system of comprehensive insurance.

Change in the terms and conditions of medical staffing should also, in Lord Dawson's view, come gradually. All sections of the profession will no doubt derive an increasing proportion of their earnings from salary and less from fees. More whole-time posts, especially in hospitals, will be sought and created. If we can agree on the general plan and proceed step by step experimentally, there is no need to decide now whether medical practice should be whole-time service. We and the public will learn as we go along. But he pauses to consider whole-time service on its merits, and concludes that the individualism requisite for medical progress would languish within the boundaries of a State service.

Lord Dawson's message deserves the most careful consideration. Change must come, and it would be unstatesmanlike on the part of the medical profession merely to try to minimize this fact. Our motive should be to guide "the moving finger" in the way which we think will be in the best interest of the people. Many medical men may feel that there are too many unknowns to permit the formulation of a cut-and-dried scheme. To them Lord Dawson's attitude of empiricism and suspension of judgment on non-essentials will especially appeal.

ABSORPTION OF INSULIN THROUGH THE INTESTINE

With the isolation of insulin and the establishment of the function of the islets of Langerhans, it might seem to those not frightened of the word "teleology" that the organism in its development had gone to great lengths to ensure that the hormone reached the blood stream without any involvement of intestinal function. True, it seems strange that the anatomical position of the islets should have been in the very midst of an organ mainly concerned with the production of part of an enzyme system extremely effective in destroying the activity of their special secretion. But, after all, the hormone enters the circulation very easily; so long as there is no activator of trypsinogen to be feared the

insulin is safe—so safe indeed that ligation of the ducts, while leading to degeneration of the externally secreting gland, leaves the islets intact. The later demonstration that the purified crystalline insulin is a protein and that its active groups are inactivated by proteolytic enzymes left little doubt that so far as the hormone itself is concerned administration by mouth is doomed to failure. Had there been, as in the case of the thyroid hormone, a protein fraction combined with a non-protein active fraction, the case would have been quite other than it is. The great clinical advantage of circumventing this obstacle has led a host of workers to try all sorts of ways to make the intact hormone cross the border between the hostile intestinal lumen and the blood stream. Sublingual absorption was demonstrable, nasal and pulmonary absorption could not be unequivocally proven, absorption by the rectum, the vagina, and the scrotum were all tried, but the advantages of administration by these odd routes were somewhat doubtful. As to absorption from the gastro-intestinal tract, various matters could be demonstrated. Injection of insulin into the mesenteric veins, and hence rapid passage to the liver, did not affect the activity of the hormone; and injection into the submucous layer of the intestine was followed by undiminished activity. Thus all that was necessary was to elude the enzymatic destruction in the intestine and to cross into the deeper layers of the intestinal mucous membrane.

Among the recent contributors to this problem, Frommel[1] gives a rapid review of previous work with critical estimates of the main trends in experimentation. He is doubtful of the value of experiments with depancreatized dogs, phloridzinized dogs, or anaesthetized animals. Acute experiments involving laparotomy are criticized on the ground that such operations cause hyperglycaemia, which falsifies any results that may be interpreted as due to insulin introduced into a part of the intestine. Further, it is pointed out that insulin effects may be brought about by passage through the incision into the blood stream. Again, the use of stomach tubes for introduction of insulin into the gut of the rabbit may lead to considerable hyperglycaemia. Many substances have been administered with insulin to obviate its enzymatic destruction—e.g., alcohol, oils, organic acids, sodium oleate, bile acids, hexyl-resorcinol, liver extracts, serum, saponins, calcium lactate, bicarbonates, salol, photungstic acid, extracts of worms, etc. From all these experiments the author is satisfied that insulin can be absorbed from the digestive tract, that relatively large doses must be used, and that the fall in blood sugar is not proportional to the insulin dosage.

The practical problem, as seen by Frommel, is to perfect a technique of administration or of preparation of the hormone. In a series of experiments on rabbits he set out to confirm the absorption of insulin from the gut with the special object of finding where the hormone met with the least resistance. Non-anaesthetized fasting rabbits were used and insulin was injected with a very fine tuberculin syringe into the intestinal lumen through a buttonhole incision in the abdominal wall. For some reason, not clear to us, the author used a method of blood-sugar estimation which he admits is not accurate but is sufficiently so for comparative observations. For experiments of this kind the rabbit is not the ideal animal, and, indeed, Frommel recognizes the fact, but it is so sensitive to insulin that he felt impelled to follow many other workers and use it. In spite of many objections to the procedures adopted, the results obtained may be taken to show that insulin can be absorbed from the digestive tract of the rabbit and that this absorption is best in the second part of the duodenum. It is pointed out that in the rabbit the distance between the duodenum and the entry of the pancreatic duct is some 40 cm., which permits of a long immunity from the action of trypsin. This is confirmed by the fact that the lower the injection was made into the gut the poorer the insulin effect became. Frommel is content to say that if an envelope for insulin can be devised which will be able to resist the gastric acid and dissolve immediately in the mildly alkaline duodenum, then some hope of oral therapy is justified.

Recently Hanzlik and Cutting[2] have pursued this to the extent of trying it on diabetic subjects. They had demonstrated in rabbits, guinea-pigs, mice, and rats that insulin introduced with various pharmacodynamic agents into the intestinal tract is to some extent absorbed. Rabbits were lightly anaesthetized with ether, the abdomen was opened, a 10-cm. length of jejunum or ileum was ligated, and the insulin mixture was injected into it. Rectal and colonic injections were given. For the smaller animals the material was introduced by stomach tube. Thus these experiments were all open to the objections raised by Frommel. Still, evidence was obtained that absorption of insulin could be promoted by surface active compounds, alcohol, astringents, and, best of all, by quinine salts. Quinine sulphate seems to act both by inhibiting enzymic action and by some local effect on the cell surface. Quinine with insulin given by mouth in capsules produced definite transitory hypoglycaemia in normal persons. The doses used were, of course, enormous: 5 units for the mouse to 500 units for a man. When these workers turned to diabetic patients they gave 1/2 g. of quinine sulphate and 500 units of crystalline insulin in a gelatin capsule covered with a cellulose plastic material which would prevent solution by the gastric juice. One to three capsules were given daily, three-quarters of an hour before meals. Still further to guard against gastric juice, 10 c.cm. of diluted, coloured, and flavoured alcohol was given before each dose in some cases. Ten ambulatory cases of diabetes—2 mild and 8 more or less severe—were treated in this way. The effects on glycosuria and maintenance of balance were irregular, and in about half the cases there were symptoms of cinchonism. In three cases oral insulin was a complete failure. Moderately severe diabetes was not controlled even by 1,500 units a day. The authors agree that quinine must be substituted by some other compound which inhibits enzymatic action and depresses the selective absorbing intestinal cells. If the day should come when the diabetic can lay down his syringe and take his insulin by mouth then the indebtedness of the diabetic community to medicine and physiology will be vastly increased.

[1] *Rev. méd. Suisse rom.*, 1940, **60** 1109.

[2] *Endocrinology*, 1941, **28**, 368.

MASS MINIATURE RADIOGRAPHY

In June, 1940, the Committee, under the chairmanship of Lord Horder, appointed by the Minister of Labour and National Service to advise on medical questions published its report on the detection of pulmonary tuberculosis in the examination of recruits for the Armed Forces. The Committee came to the conclusion that the adoption of mass radiography was impracticable then, in view of the fact that "the necessary apparatus and a sufficient number of expert examiners could not be made available for some months, and the introduction of this form of examination would seriously delay the examination of recruits." In a further report on the same subject just issued by the same committee it is stated that the Committee has come "to

the definite conclusion that they must confirm their previous recommendation in this matter." In the evidence leading up to this conclusion these two statements occur: (1) "Were the adoption of mass miniature radiography as part of the examination by the medical boards practicable in other respects, it is uncertain, from the evidence available to the Committee, if (say) twenty *x*-ray units of the type recommended for the purpose could be made available within 6 to 9 months if the order for these were given at once; and fewer than this number would, from the administrative aspect, be useless." (2) "The Committee could get no assurance that a panel of *x*-ray experts and of clinical tuberculosis specialists capable of interpreting the films would be available, no 'pool' at present existing." It is rather melancholy reading to find the same arguments being repeated after a lapse of nearly two years.

The Committee, however, commends the steps already taken by the Services to extend the application of mass miniature radiography. It says that, although it would be ideal to have recruits examined radiologically at the time they are examined by medical boards, this is not practicable, and that the most satisfactory alternative is to undertake such examination after entry into the Services. The Committee quotes some figures to "show that the magnitude of the problem facing the Committee, contrary to its estimate in the mind of a section of the public, is very small." As part of this evidence the results of examination of 12,000 new entrants for air-crew duties is given, less than 0.2% being found to have pulmonary tuberculosis. Unless we are mistaken, this represents the incidence in a most carefully selected group of men. It would be a pity if the Committee's report were to give the impression of minimizing either the problem of tuberculosis in wartime or the need to take all possible measures to tackle it. There is in the report no reference to pulmonary tuberculosis among young women, and to the need for detecting this among the numerous women of the susceptible age group now being employed in industry and the Armed Forces in rapidly growing numbers. The mortality from tuberculosis has risen steadily since 1939, and it is not likely to diminish until this war is over. When the Committee met in May, 1940, there was plenty of evidence available on the value of mass radiography, as a leading article and a paper by F. J. Bentley and Z. A. Leitner showed in our columns on June 1 of that year. We believe that the Committee's recommendation in 1940 was wrong, and regret that it finds it necessary to confirm the mistake.

ALCOHOLIC GASTRITIS

It is still by no means easy to correlate the pathological changes, the symptoms, and the causes of gastritis. Even with the more precise knowledge obtained by the use of the gastroscope we are far from understanding clearly the clinical manifestations of chronic gastritis. At least one type, however, has been fairly generally accepted as characteristic of the disease—namely, the alcoholic. But now we are asked to change our ideas even on this apparently well-established condition. Alcohol is indeed becoming shorn of much of its pathological glory. "Alcoholic cirrhosis" is only in part "alcoholic," and "alcoholic neuritis" is largely an avitaminosis. Now it appears that "alcoholic gastritis" is often not gastritis at all. Dr. L. H. Berry[1] examined 100 chronic alcoholics gastroscopically. Most of his patients had been drinking hard for fifteen years or longer; some were taking as much as 2 to 3 pints of whisky, others a gallon of beer, daily; 90% were also heavy smokers; and most of them had tremors and cramps and were often drunk. Among these 100 hardy addicts, 84 suffered no distress after meals. They took large quantities of condiments, such as pepper and horse-radish, ate all kinds of meat, baked and fried food, and had normal or slightly loose daily bowel actions. Their only digestive symptom was morning nausea, and when present it was mostly relieved by the first drink—usually about half a pint of whisky in the morning. When these almost symptomless drinkers were gastroscoped, the gastric changes seen were strikingly less in evidence than those observed in non-alcoholic gastritis. In 35% the only changes noted were those corresponding to simple hyperaemia, which were regarded as a mild chronic superficial gastritis. In 17% the changes were more severe, but were still only of moderate degree. In 26% the mucosa appeared to be normal, the remainder having various stages of true hypertrophic or atrophic gastritis. Among these 84 heavy and persistent drinkers, then, not only were gastric changes absent in a number of them, but in most were only slight; even in those with lesions demonstrable gastroscopically, symptoms were negligible. A rather higher incidence of true gastritis was noted in a further 16 subjects. They actually drank less alcohol than the alcoholically ambitious 84, and some of them had stopped drinking entirely for long periods. All 16 had some degree of digestive symptoms, mainly of general abdominal discomfort and fullness, with occasional nausea or vomiting.

Putting all these results together, Dr. Berry concludes that of 100 unquestioned cases of chronic alcoholism, unequivocal chronic gastritis was present in only 35%. Other writers have already shown that it is only late in the condition that alcohol leads to atrophic changes in the gastric mucosa, and all are agreed that the evidence that alcohol predisposes to gastric carcinoma or peptic ulcer is, to say the least, inconclusive. Some have even suggested that peptic ulcer is seen less often in alcoholics than in teetotallers. One conclusion that can be drawn from these studies is that persistent and heavy toping is compatible with a normal gastric mucosa. A second that appears to be justified is that in the production of chronic gastritis in an alcoholic person alcohol is not the only factor.

[1] *J. Amer. med. Ass.*, 1941, **117**, 2233.

UVEAL SYNDROMES

In 1926 Harada reported ten cases of bilateral exudative choroiditis leading to retinal detachment and associated with neurological symptoms. The affection sets in acutely, with severe headaches and occasionally with fever. Subsidiary and inconstant features are deafness, changes in the hair such as alopecia and premature greying, and disturbances in the pigmentation of the skin, shown by vitiligo. Judging by the frequency of case reports the affection is not uncommon in the Japanese, though its occurrence among Caucasians has been reported in various European countries and in the U.S.A. At the height of the attack the patient may be blind, but recovery with good function is the rule; there is spontaneous healing of the detachment, the previously turbid vitreous becomes clear, and the whole condition subsides within two to eight months. The affection falls most frequently on men aged 30 to 50, though it has been noted in a child aged 5½ years. Apart from the severe headaches, the other neurological signs and symptoms are a transient increase in the pressure of the cerebrospinal fluid and a range of disturbances so mild as to suggest an essentially asymptomatic tuberculous meningitis, or so severe as to lead to hemiparesis. A striking negative feature is the rarity of involvement of the iris and ciliary body. In reporting the occurrence of the first case to be observed in Italy, Rubino[1] suggests that Harada's disease might well be designated the "uveo-

[1] *Ophthalmologica*, 1941, **101**, 321.

meningitic syndrome." This syndrome is regarded by some as a variant of Vogt-Koyanagi disease, in which there is severe bilateral iridocyclitis associated with dysacousia, and with the skin and hair changes that are seen only as occasional features in Harada's disease. This affection, which is also commonest in the Japanese, sets in acutely with headaches and dizziness, and the iridocyclitis may extend to the choroid. The eye changes are so severe as to simulate sympathetic ophthalmia, from which it is distinguished by the presence of general disturbances and the associated skin and hair anomalies. Retinal detachment has been recorded only twice in this affection, though the difficulty in seeing the fundus may mask a greater incidence of this complication. The prognosis as to vision is not good: only about 30% of patients recover vision of 6/12 or better. Rados[2] holds that the two affections are distinct entities—a view shared by some Japanese authors and opposed by others. Rados's view is based mainly on the fact that in Harada's disease retinal detachment is always present and tends to spontaneous healing, while in the Vogt-Koyanagi disease detachment is probably uncommon, the course of the affection unfavourable, and the associated skin and hair changes almost constant.

The linking of the Vogt-Koyanagi disease with Harada's disease has an interesting parallel in the symptoms that are occasionally seen in sympathetic ophthalmia. Greying of hair, poliosis of both upper lids, and deafness in sympathetic ophthalmia was observed by a number of oculists in the last century, and particularly by Jonathan Hutchinson. At the present four types of uveal disease with general associations are recognized: sympathetic ophthalmia with deafness and hair and skin changes; acute iridocyclitis simulating sympathetic ophthalmia in its severity and associated with deafness and hair and skin changes; bilateral acute choroiditis with retinal detachment and meningitic signs; and the uveo-parotid syndrome, with its severe iridocyclitis and peripheral nerve palsies. The interrelation of these is not clear. The first affection is traumatic in origin and the three others non-traumatic. It is possible that a virus infection is the underlying factor in all four, though the evidence that the uveo-parotid syndrome is a modified tuberculosis (benign lymphogranulomatosis) is considerable.

EXTENSOR RESPONSES EVOKED BY EXERTION

There cannot be many who know that the flexor plantar reflex can in some people be converted into an extensor response by moderate physical exertion. This does not seem a very important observation, even if it is accepted, but Yakovlev and Farrell[3] have studied the phenomenon and have made some far-reaching, if tentative, deductions from their observations. They elicited the plantar reflex in 168 normal young men—college students in an officers' training camp—before and after an exercise in manœuvres. A normal plantar reflex was obtained in all instances except one, in which an extensor response was found on one side. There was no apparent reason for this anomaly in this one case. The men marched 14 miles with packs and rifles, and at the end a unilateral extensor response was found in 10 and a bilateral abnormal response in 2, although the men were as normal and healthy as could be. In contrast to this group, 229 physically inferior and mentally defective men in a farm colony were studied. They were a poor lot with a mean intelligence quotient of 0.44, the highest being 0.73; two-thirds were imbeciles and the rest morons. While resting in bed 6 of these had a unilateral and 5 a bilateral extensor response. After 7 hours of work in the wood yard a change was found in 49 (21.4%). There was a tendency to extension in 12, a frank unilateral response in 24, and a bilateral extensor response in 13. The authors took 60 of the defectives whose responses had remained normal after this exercise and examined them after 10 miles and 24 miles of marching: 13% and then 23% of these showed extensor responses. Repeated experiment showed that the same individuals tended to have the abnormal reaction on the same side on different occasions, and that repeated stereotyped exercise such as marching was much more likely to induce the abnormality than was irregular manual work.

Neurological examination showed that 34% of those defectives with a transient extensor response, and only 12% of those with normal flexor plantar responses, had other signs of pyramidal defect, such as an increase in tendon jerks or clonus in the abnormal limb. Signs of autonomic dysfunction were also present in the affected limbs in some instances. Age played no causal part, but there was a history of disease of the central nervous system during infancy such as birth injury, infantile convulsions, or evidences of local damage to the central nervous system in 44% of the negative cases and in 68% of the positive. It was interesting that, in these, post-natal illnesses were found in 23% and 26% respectively, and so had played no significant part, while pre-natal defects were present in 21% and 42%. A further point was that there was a definite delay in the mental development of those with transient extensor plantar responses.

Yakovlev and Farrell point out that the extensor response in infants is the first step in the upbuilding of the erect posture, but as myelination occurs this primitive reflex pattern gives way to a flexor response. The first reflex is postural and proprioceptive, the second phasic and nociceptive. Loss of cortical discrimination converts the phasic plantar reflex into a subcortical postural response. Sustained locomotion, especially in those with a defective pyramidal pathway, leads to loss of the cortical flexor response and release of the subcortical postural extension, because locomotion requires a uniform and more locally restricted cortical activity and so leads the more readily to a state of fatigue of the area of motor cortex undergoing activity. Not all neurophysiologists could follow this argument all the way, but the authors contend that the onset of other pyramidal signs, and of autonomic disturbances, with presumably a functional disturbance in the pre-motor area, lends weight to the hypothesis. They conclude, therefore, that a transient Babinski sign, with the other changes, "fanning" of the toes, autonomic changes, and sometimes rigidity, occurring after relatively moderate exertion, reveals a weakness of the cortical dominance in the nervous integration of a constitutionally inferior person. To reach such a conclusion as a result of scratching the foot calls for much thought and ingenuity, but on this tenuous evidence it must remain for the present a tentative hypothesis.

[2] *Arch. Ophthal.*, Chicago, 1941, **26**, 543.
[3] *Arch. Neurol. Psychiat.*, Chicago, 1941, **46**, 322.

The British Spas Federation has drawn up a scheme for the provision of spa treatment under the National Health Insurance Acts. After a recent meeting of the Federation at Harrogate it was announced that the scheme, which aimed at giving individual treatment to each insured person who needed it, would make the fullest use of the bathing establishments in the different spas. It was also announced that every spa is prepared to place its facilities at the disposal of members of the Forces at specially reduced rates, and that representations were being made to the military authorities to organize medical services at the spas.

War Surgery of the Extremities

This is one of a short series of articles based on lectures given at the British Postgraduate Medical School, Hammersmith

SEPSIS IN WAR WOUNDS OF THE LIMBS

BY

J. PATERSON ROSS, M.S., F.R.C.S.

Infection of wounds received in battle or in air raids is essentially the same as that occurring in wounds due to road or machine accidents in peacetime. The local complications, such as spreading cellulitis and secondary haemorrhage, and the more widespread effects—lymphangitis, septicaemia, phlebitis, and pyaemia—are identical, and neither their pathology nor their treatment will be considered here. I will endeavour to point out what our experience has shown us to be the significant differences in detail between the wounds of peace and war.

The healing process is influenced from the outset by the character of the injury; bruising and laceration of tissue by a rapidly moving projectile, or crushing by masonry, together with diffuse extravasation of blood, provide conditions which are at once the most favourable for bacterial invasion and the least favourable for tissue repair. Furthermore, they would appear to be ideal for establishing gas gangrene, especially as the organisms are present not only in soil but also in rubble, which contains enough calcium to encourage their growth. Taking everything into consideration, it is surprising that most of these wounds do so well.

Contamination and Infection of Wounds

In searching for the explanation of this apparent discrepancy between the anticipated and the actual result, the distinction between contamination and infection of a wound must be clearly recognized. Contamination of war wounds is almost inevitable, and is particularly heavy when the skin wound is extensive, when the deeper tissues are badly lacerated, and when a missile which has passed through clothing is retained. It must be remembered, however, that all the organisms present may not be pathogenic, and will probably not include the haemolytic streptococcus: in a series of 17 air-raid casualties whose wounds we examined bacteriologically in the first forty-eight hours haemolytic streptococci were found in only one.

In such a contaminated wound the organisms are still merely on the surface or in the cavity of the wound, but after the lapse of a few hours the infection of the tissues deep to the surface and surrounding the track of the projectile is bound to occur. The duration of this period before infection becomes established depends on the factors influencing tissue resistance, the most important being the virulence of the micro-organisms, the extent and degree of tissue damage, and the severity of haemorrhage, shock, and fatigue. It may vary from about four to eighteen hours, but by the end of that period the opportunity for mechanical cleansing of the wound by excision, which is clearly the best prophylactic against infection, has been lost.

Early Excision

The best safeguard against infection of a wound is early excision, and if this is thoroughly performed and the surgeon is satisfied that he has been able to reach and remove all the devitalized tissue, the wound may be closed completely, either with or without the local application of an antiseptic. Primary closure of a wound is the best safeguard against secondary infection, and provided the patient can remain under the care of the surgeon who undertakes the operation it should be possible to adopt this method of treatment for most wounds involving only skin and muscle. In exceptional cases it may be possible to close wounds even when a fracture has occurred, but it will usually be best to leave such wounds open.

There are certain exceptions to the rule that wounds should be thoroughly excised with a view to primary closure. If radical excision would involve risk of irreparable damage to important structures such as nerves and tendons it will often be preferable to lay the wound open, excise as much as can be removed without jeopardizing the function of the limb, and then pack it open. "Through-and-through" wounds can usually be left; thorough excision would involve extensive opening up of tissue and probable damage to the function of the part, whereas we know from experience that, particularly in bullet wounds, contamination is minimal, drainage is free, and healing takes place readily. If a comminuted fracture is caused by a projectile traversing the bone, and particularly if a joint is involved as well, the difficulty of cleansing the wound mechanically by excision is almost insuperable, and primary closure must not be considered.

The need for antiseptics in the treatment of early wounds is open to argument, but could best be determined by experiment. Although excision can scarcely be expected to rid the wound entirely of its organisms, the few that remain will probably be dealt with by the natural defence mechanisms, provided they are not embarrassed by foreign chemical substances. On the other hand, we have treated a large number of wounds either by irrigation with 1 in 1,000 euflavine or by the introduction of quantities up to 15 g. of sulphanilamide powder without any apparent interference with healing and with a most gratifying freedom from infection. It would undoubtedly be wrong to put in these chemicals if they were unnecessary, and not until two comparable series of wounds have been excised and sampled bacteriologically, and then one group treated with antiseptic and the other left untreated, will we be able to decide upon the value of antiseptics as prophylactic agents against infection. Until this information is forthcoming, however, experience justifies their use.

It cannot be too strongly emphasized that no amount of antiseptic can compensate for inadequate excision. The good results which have followed local treatment by sulphanilamide have led to the suggestion that it should be applied as part of the first-aid treatment of a wound. The value of the drug used in this way is open to doubt, but the harm which could result if its use gave rise to a false sense of security, and consequent delay before excision, is unquestionable.

Prevention of Gas Gangrene

The prevention of gas gangrene calls for special comment. The prevalence of gas-gangrene organisms in war wounds has been shown by bacteriological examination of the tissue excised from wound edges, yet the incidence of true gas gangrene has turned out to be very much less than might have been expected. The comparative rarity of this dread infection is no doubt attributable very largely to early wound excision; and the local application of sulphanilamide may also have played an important part in combating the disease. Several instances are on record, however, in which gas gangrene has occurred in a very high proportion of a small group of wounds; but it must be remarked that something—either the critical condition of the patients or a temporary dislocation of the medical services—prevented their early surgical treatment. In such circumstances there seems to be a clear indication for the prophylactic use of gas-gangrene antitoxin. Statistics are not yet available to indicate exactly what can be achieved by serum used in this way, though steps are being taken to obtain this evidence. Prophylactic treatment means the administration of serum at once, and not when the wound looks suspicious; and it is likely to be required particularly in cases of compound fracture, in lacerated wounds of muscle contaminated by brick dust, soil, or rubble, and in small punctured wounds through clothing. Polyvalent antitoxin has been recommended for prophylactic use (3,000 international units of *Cl. welchii* antitoxin, 1,500 I.U. of *Cl. septique*, and 1,000 I.U. of *Cl. oedematiens*), but since experience goes to show that infection by *Cl. septique* and *Cl. oedematiens* is rare it has been suggested that a dose of 7,500 I.U. of *Cl. welchii* antitoxin alone, given intramuscularly at the earliest possible moment, may provide better protection against the usual type of infection.

Treatment of an Infected Wound

If the wound is not seen until a later stage, when organisms have already passed from the surface into the living tissues surrounding the wound and have entered the neighbouring lymphatics, excision is no longer feasible, as it would merely interfere

with the natural defence mechanisms without ridding the tissues of invading organisms. Surgery must aim at the removal of all foreign material and dead tissue from the depths of the wound and at establishing free drainage of all side tracks and pockets; it may therefore be necessary to enlarge the original wound, and counter-incisions may have to be made to give a free exit for infected material.

If the wound can be laid completely open in this way, antiseptics should be unnecessary, and if any portion of the wound is undrained or there are retained fragments of infected bone or slough antiseptics will be useless. Needless to say, the question of suture does not arise, and our experience coincides with that of the many other surgeons who have found strips of vaselined gauze, laid lightly in between the wound edges, to be a very satisfactory dressing.

It is most important to splint a limb with such an infected wound. In the summer of 1940, when we had to manage a large number of wounds which had been infected for several days before they came to us, it was with considerable trepidation that we treated them in closed plasters; but we soon discovered that our fears were groundless and that for most wounds the method possesses many advantages over alternative modes of fixation. It is remarkable how the general condition of the patient improves when the limb has been put in plaster; this is due in part to increased comfort, but also to a diminution in lymphatic absorption brought about by muscular inactivity and by the supporting effect of the plaster which minimizes the local oedema. The remarkable difference between the puffy, swollen, congested tissue around a wound treated on any other splint and the flat skin and supple tissue surrounding a wound which has just come out of plaster seems to me most important as an indication of the mechanical factor underlying the beneficial effect of treatment in plaster upon both local and general reactions to the infection.

A further advantage of the closed-plaster method is the infrequent dressing of the wound, which avoids unnecessary interference with delicate growing cells and diminishes the risk of secondary infection, which is so liable to occur in wounds that are left open.

Secondary ("Hospital") Infection

The frequency of serious secondary infection of wounds in hospitals was pointed out by several observers during the war of 1914-18, and the position may be briefly summarized by stating that whereas a very high proportion of early wounds are free from haemolytic streptococci, an equally high proportion of late wounds are infected by these organisms. To the surgeon familiar with the routine of the "clean" surgery of peacetime, when wounds are closed completely and not looked at until the stitches are removed, by which time sound healing by primary union has occurred, this record of the prevalence of hospital infection by streptococci seems almost incredible: but with war wounds that are open and ready to receive any organisms in their neighbourhood the conditions are so different that our attitude towards the risk of adding further infection to a wound must be completely changed. Infection of a war wound by haemolytic streptococci occurs but rarely at the time of its infliction, the missile, dust, or foreign matter, and even clothing, carried into it being very seldom to blame: the streptococci found in the wound at a later stage have come from the hospital environment.

One is sometimes asked whether the addition of a few extra organisms to an already heavily infected wound can really matter very much, and it may be urged that granulation tissue forms a good barrier against bacteria and their toxins. In reply to this question one has no hesitation in saying that the addition of fresh organisms, certainly of haemolytic streptococci, has often in our experience been associated with considerable and even alarming constitutional reactions, and locally with the development of cellulitis, erysipelas, delayed healing, and inhibition of growth of skin grafts. The neglect of the growing streptococcal population of a ward is likely to have other far-reaching effects, such as outbreaks of tonsillitis and bouts of "unexplained" pyrexia and ill-health, and also skin infections, among the ward staff as well as the patients.

Although streptococci have been mentioned it must not be inferred that they are the only organisms which find their way into open wounds in hospital wards. The *Staph. pyogenes* is equally important, and there are many other organisms which, though not producing such striking constitutional effects or constituting such a threat even to the life of the patient, may nevertheless delay the healing of a wound by prolonging the process of suppuration. Where do these later invaders come from, and what should be done to prevent hospital infection of wounds?

Sources of Hospital Infection of Wounds

Noses and Throats.—Frequently streptococci are carried in the throats and staphylococci in the noses of patients and their attendants, who show no evidence of disease in these regions. The carrier rate may be greatly increased among the personnel and patients in wards where there are heavily infected wounds, and the necessity for blocking this channel of infection by wearing impervious masks when doing dressings is obvious. The use of these masks is not to be confined to those showing signs of a throat infection: everyone involved in the dressing must wear a mask, which must cover the nose and come well down under the chin to prevent the downward spread of droplets from the mouth.

Fingers.—There are also skin carriers of staphylococci, but the chief mode of transference of infection on the skin of surgeons or nurses is by direct contact with other infected wounds or with material infected from them. Hands may be infected not only by touching the skin near an infected wound or by handling pus-soaked dressings—both of which cannot be too strongly condemned—but also by handling the outer layers of dressings, bandages, plasters, and bedclothes. It is not an overstatement to say that the bedclothes of a patient suffering from a wound discharging haemolytic streptococci may be just as dangerous as those from a case of scarlet fever. There are only two possible ways of avoiding skin contact: either dressings must be done entirely with instruments or sterile gloves must be worn. As a routine the instrument technique is preferable; but for very large dressings and irrigations, and if it is necessary to examine a wound or its neighbourhood by palpation, gloves should be worn.

Air.—Several observers have shown how the bacterial content of the air of a ward varies from time to time, depending upon the activities of the personnel, the air being especially heavily laden with organisms during bed-making and floor-sweeping. Though the total quantity of dust raised during these operations can be considerably reduced by oiling floors and blankets, there are problems in the supply of apparatus and material which render these methods difficult of application in wartime, and it is sufficient for practical purposes if ventilation is decreased so as to stop draughts, and if no sweeping or bed-making is allowed for at least an hour before dressings are done. Wounds should be exposed for the shortest possible time, and if for any reason there has to be some delay in reapplying the dressings the wound should be covered with a sterile towel. When dressings are removed they should be placed immediately in a lidded bucket, which may, if necessary, contain some disinfectant fluid. All receptacles for dressings, instruments, or lotions should have lids or some covering to protect them from airborne infection—in fact, the technique should resemble very closely that of the bacteriological laboratory, where organisms are handled only with instruments which can easily be sterilized, and cultures are kept uncontaminated in lidded (Petri) dishes.

Baths.—Every surgeon knows the benefit to be derived from baths when an infected wound has reached a certain stage in its cure, yet the risk of spreading infection from one patient to others using the same bath has not been properly appreciated in the past. Scrubbing the bath with 2 oz. of undiluted lysol is the surest method of disinfection, but it must be done thoroughly: and if cracks in the surface of the bath appear, re-enamelling must be insisted upon, as the cracks cannot be sterilized.

Plasters.—Once an infected wound has been encased in plaster there is a tendency to regard it as "safe," yet we know that organisms may be grown from the outside surface of the plaster, and it often happens that when a plaster has to be retained for a prolonged period pus runs out at its ends and infects the bedding and everything else with which it comes in contact. The only way I know of dealing with this state of

affairs is to change the plaster; no method of sealing which I have yet seen is efficacious; the incorporation of antiseptics in the plaster is valueless; and the bags of filter-cloth which are so valuable as deodorizers cannot be expected to act as disinfecting agents. It is a good rule, following operation theatre practice, not to remove a plaster in the ward, but to take the patient to a special room where the infected plaster dust will do less harm. It is well to moisten an infected plaster before cutting it, and great care must be taken to avoid contamination of the assistant's fingers when opening up the plaster, and also to boil all the instruments (plaster shears, etc.) before cutting another plaster.

Instruments.—It is a popular fallacy that boiling blunts instruments. If cutting instruments are wrapped in lint so as to protect their edges from damage by bumping up against heavy instruments in the sterilizer they will not be blunted by boiling repeatedly for a period of two minutes, which is long enough to kill even spore-bearing organisms if washing soda (2%) is added to the water. Hollow needles and syringes should always be boiled before use. It is best to store them dry, for the usual method of keeping them in spirit is not safe. The reason for using spirit is to have the syringe available for immediate use in a solution which will not rust the needle and the metal parts of the syringe; but spirit is not a reliable antiseptic, and as its disinfectant properties are most effective at a 70% dilution, the water contained in this mixture will rust the metal parts. If it is essential to keep instruments in a disinfectant solution after they have been sterilized by boiling, dettol or one of its allies should be used. The addition of borax (0.1%) will prevent rusting of needles and other metal parts. Once it is realized that the traditional boiling for twenty minutes is excessive, and that sterilization can be effected in a tenth of this time, much of the objection to boiling as the method of preparing instruments even for emergency use must disappear. Whether boiling immediately before use is adopted or not, the use of spirit is both unsatisfactory and extravagant, and ought to be abandoned. The processes for disinfecting all the apparatus used in doing dressings—bowls, douche-cans, and tubing, as well as instruments—must be carefully scrutinized to ensure their efficacy if infection from one dressing to the next is to be entirely prevented.

Final Healing of Wounds

If all precautions against secondary infection are rigorously practised, local measures designed to promote the nutrition of the tissues around the wound should soon produce a degree of healing which justifies an attempt at closing it completely either by secondary suture or by skin-grafting. If this step is indefinitely delayed, granulation tissue is formed in excessive amounts and the accompanying fibrosis antagonizes epithelization of the ulcer. The application of various growth-promoting substances with the object of accelerating healing have not given any very striking results: it really seems hard to improve on Nature's own methods if she is given a chance.

In choosing between secondary suture and skin-grafting the chief consideration should be the skin loss at the time of the original injury or as the result of later complications. If little or no skin has been lost, suture should give good results; grafting is necessary to repair any considerable area of skin loss. In choosing the time for these operations the two chief factors to be taken into account are nutrition and infection; and if after every effort has been made to eradicate it there is still some residual infection, dusting sulphanilamide powder over the raw surface before applying the grafts may achieve success.

In addition to the local treatment it is most important to pay due attention to the general nutrition and metabolism. Over and over again one sees wounds which are indolent for no local cause, and which quite suddenly begin to heal rapidly with an improvement in the patient's general condition. Experience has taught us the importance of good food in those cases, and experiment has shown how important vitamin C (or ascorbic acid) may be in maturing scar tissue. Fresh air, even in the absence of sunshine, is a magnificent stimulus to metabolism, and it is scarcely necessary to stress the importance of attending to the state of the blood and circulation, and the great value of transfusion for anaemia, and of movement and exercise from the earliest stages of treatment.

The management of the final stages of healing, important though it may be, is really a familiar affair in times of peace, and need not be emphasized when we are dealing with the problems peculiar to war wounds, for with them success or failure will depend almost entirely upon the treatment given in the course of the first few hours after receipt of the injury.

Correspondence

Serodiagnosis of Syphilis

SIR,—The annotation on serodiagnosis of syphilis (March 14, p. 364) is of more than ordinary interest at the present time in view of the increase in the incidence of syphilis owing to war conditions. That the article has evoked no discussion or comment is significant of the scant interest practitioners take in the performance of the tests they ask for on behalf of their patients. It may be confidently asserted that of all the pathological investigations usually asked for the serodiagnosis of syphilis is probably the most important from the point of view of the patient's physical and mental health, and that an incorrect report, whether it be positive or negative, may be fraught with serious consequences to the patient and possibly his family. If an erroneous positive is reported and the test is not repeated as it should be the patient will be doomed to receive at least two years' unnecessary treatment with a lumbar puncture or two during that time, and the incident may lead to a domestic upheaval. If an erroneous negative report is given the patient will receive no treatment, the innocent partner may become infected, and, later on, perhaps the children.

Even though we may be at the most critical phase of the war we should take steps to safeguard the coming generation against the unnecessary ravages of congenital syphilis. By testing and, if found positive, treating every expectant mother during pregnancy one can almost assure the birth of a healthy child. Dr. Earle Moore, the eminent American syphilologist, has written: "The birth of syphilitic babies is preventable. Congenital syphilis is the disgrace of modern medicine."

The syphilis problem in this country is not so serious as it is in the U.S.A. (where it is complicated by the coloured population), but in my opinion it is still of sufficient importance to animadvert upon the complacency, one may almost say the indifference, shown about the matter. For example, very little laboratory research on syphilis has been done here; so long as a Wassermann is asked for practitioners do not seem to mind where or how the test is done. "There is no need to try to prevent congenital syphilis, it is a very rare disease": such is the erroneous current teaching; and so on. The crux of the whole matter, Sir, is that many pathologists do not appear to appreciate the responsibility they shoulder when they undertake the serodiagnosis of syphilis—a responsibility to the State, to the patient, and to his family—for if they did they would not, as is so often done, (1) allow the test to be carried out by technicians, or (2) "simplify" the recognized approved techniques to save time and trouble and by so doing render their results unreliable.

Your annotator states that a similar check upon the standard of performance of the serodiagnostic tests for syphilis to that carried out in the U.S.A. has been done in this country, "though on a rather smaller scale." It has certainly been on a smaller scale, and at too long intervals to be effective, and, of course, dealt only with "approved" laboratories. Moreover, one knows of instances where even in "approved" laboratories under the Ministry of Health's V.D. scheme the tests have been carried out by technicians, though this would not be apparent to an inspector of laboratories, who usually announces beforehand his intention to call. One cannot, therefore, share your annotator's optimism that serum testing under the V.D. scheme may be considered satisfactory, though one agrees with his statement that the diagnosis, tests of cure, and exclusion of syphilis are matters of such importance to the State and to the individual that none but the highest standard should be acceptable. To attain this end *all* tests for syphilis should be carried out in approved laboratories, where hundreds of tests would be done every week by expert pathologists who

have been specially trained in approved methods, and during that training have frequently done the tests under expert supervision.—I am, etc.,

London, N.12. DAVID NABARRO.

Medical Certification in Industry

SIR,—In my experience and opinion the correct solution of this vexed problem is as follows: (1) Every firm should employ its own medical adviser, who should be familiar with every process in the factory and its attendant risks. (2) Every National Service Officer should have the services of a medical man at his disposal. (3) Every local trades council should employ a local medical adviser.

The procedure suggested would be as follows. The panel doctor should continue to certify fitness or unfitness for work. If he thinks the patient's work is unsuitable he should report that fact to the works doctor and ask for a report on working conditions. The works doctor should examine the case and either support or decline to support the practitioner's opinion. If the worker feels that he has not received "justice" he should take a report from his trade union medical adviser to the National Service Officer, who should ask his own medical referee to examine the case if there is any doubt about it. By this means it would be made easier to get "unfit persons" moved from unsuitable work and more difficult for the worker who is fit to obtain a medical certificate. The onus of refusing to certify would not fall (as it often does at present) on the panel doctor.

It will be objected that there are not enough trained doctors to act as referees, factory doctors, etc. This is an unsound objection. A sound knowledge of medicine together with a careful study of the occupations carried on in a given area could provide the essential knowledge in a very short time. A little experience and some selected reading would soon enable the referees and works doctors to qualify themselves for this particular branch of industrial medicine. Dr. Kefalas's paper (April 25, p. 531) is a timely contribution to an important and urgent matter.—I am, etc.,

HOWARD E. COLLIER, M.D.

Industrial Medicine and Sickness Absence

SIR,—Having, since the war began, tried faithfully to carry out the suggestions in Mr. R. Watson-Jones's letter (April 11, p. 478), I should like to stress their importance and at the same time to offer the following remarks. Mr. Watson-Jones may recognize one of them as the substance of a letter I wrote to him a year ago. As regards planning, I think most doctors would be glad to drop the subject at present if the Government would guarantee that no radical changes in medical practice would be made till, say, two years after the war.

The most important thing in industrial medicine is that industry itself should apply the knowledge already available. Brass hats are found there as well as in other callings, and naturally the lower in the scale we go the more brazen they become. I frequently have to keep men off work longer than should be necessary because I know there will be no consideration shown for them on their return. Not infrequently men who have been off work for a few weeks come back for a longer spell in two or three days simply because they have been put immediately to some ridiculously exacting job. If the Minister of Labour could infuse humanity and common sense into some of those who detail men to their individual jobs he might do more to reduce sickness absence than all the doctors put together. Every foreman should feel responsible for the health of those under his care, should see to it that they seek medical advice early instead of late, and that they are encouraged to get back to a suitable job as soon as possible.

From the surgical point of view I think the most urgent need is for the better treatment of injuries to the soft parts. Bruises, sprains, and tenosynovitis, etc., cause much more incapacity in the aggregate than fractures. Owing to present conditions the number of these injuries is likely to increase, and though small in themselves they often affect a group of muscles the use of which is essential to doing the man's particular job. These cases seldom come to the specialist, and possibly for this reason methods of treatment hardly seem to have improved at all. Any possible methods of speeding up recovery from these injuries should be made known as widely and quickly as possible. The recent technique of procaine injections sometimes helps but often fails. Would quinine and urea hydrochloride give better results? Can anyone tell us? And can anyone tell me the best way to treat tenosynovitis?

Probably something can be done medically in getting people back to work quicker than at present. There are still a number of slackers, but actually I find more trouble in keeping people off work until they are properly well than in getting them to start again. I think few people believe more thoroughly than I do in what one might call high-pressure therapeutics; but there is a limit to the speed at which anyone can recuperate after an illness, and when I glance down the list of sick absentees at the firm for which I am medical officer I am chagrined to notice that I have about as many chronics as other doctors. The fact seems to be that we have an ever-increasing number of people working up to capacity and beyond it; as a result, when a breakdown occurs—whether it be cardiac, respiratory, digestive, rheumatic, or infective—it is largely a breakdown of the whole person and not simply one system. Nothing but a long period of rest and careful treatment will bring such a person back to productive work again. This suggests that an important means of preserving health and increasing output must be a diminution of any extraneous calls on workers. Here I believe that the evil effect of fire-watching has never been properly appreciated by those responsible for the scheme, and I should put it as one of the chief causes of sickness absence among a certain class of workers at the present time. It is getting ever more essential that workers should have proper periods of recuperation. Alerts should be curtailed except in the neighbourhood of definite military objectives, and while this may mean running some risks the lives lost through stray bombs, etc., will be fewer than those lost on the road through fatigue during air-raid warnings, and production will not suffer the same.

This is not an attempt to excuse practitioners or patients from their responsibilities. We can probably all do a bit more still, and there may be some real black sheep here and there. But sickness absence is not purely a medical problem. At the moment textbook medicine has curiously little to do with it. Fatigue, food, worry, anxiety, conditions of work, travel and home, relations with fellow workers, heredity and temperament—all play a great part in its causation. Doctors must, as Mr. Watson-Jones truly says, take every opportunity of helping, but our efforts will be seriously hampered unless managements and Ministries do the same.—I am, etc.,

Winsford. W. N. LEAK, M.D.

War Neuroses

SIR,—I welcome Capt. P. S. Thorne's attempt (April 25, p. 537) to classify "scrimshankers" and I thank Dr. Ranyard West (March 21, p. 395) for his suggestion that the proportionate decrease in conversion hysteria is partly due to the greater tendency of people to acknowledge their fear, without necessarily giving way to it.

Most of the criticisms of Sir Arthur Hurst (April 4, p. 450) are answered in my paper. I was comparing *hospitals* in this country in the last war and in this, not hospitals and the front line. I admitted that the results of treatment near the front in France during the last war showed better results, and suggested reasons for this, one being that many such cases were those of ordinary anxiety and panic, and not true neuroses. I would also admit, though some would disagree, that the results of treatment in the neurasthenic hospitals of the last war were better than in this, in spite of the much greater skill and efficiency of the present-day physician. But the material was very different. I can assure Sir Arthur that the chronic cases being sent to us in this war are very different from the genuine war-shock cases we were called upon to treat in the last war. As for the claim that equally good results would have been obtained in ordinary hospitals by medical officers who had no training, I have only to point out that our patients had already been in such hospitals under such treatment for an average of seven months!

Dr. Eliot Slater (March 28, p. 421) quotes his apparently better results than those obtained at the 41st General. I do not intend to compete, particularly as I pointed out in my paper the illusory nature of such comparisons. For instance, were his 20% (the same figure as ours) sent back to *general* duty (as all ours were during the period in question), or, as seems probable if his figures are up to date, do they include those sent under

the annexure scheme for *civilian* duty in the Army? Without such facts we cannot compare either the numbers of those returned to duty or those who relapsed. Again, 40% of ours relapsed, only a proportion of whom were boarded out; whereas he makes it appear that his figure of 11% is comparable; but his 11% were for those "boarded out"; others may have relapsed without being boarded out. Further, may not Dr. Slater's favourable results have been due not to his physical methods of treatment (which incidentally we also used to a considerable extent) but to the fact that he had, as he states, the hyperacute cases from Dunkirk. These cases, as I stated, show a far better prognosis than the chronics, and many of them, being cases of ordinary anxiety, are better treated by physical methods and sedatives, and quickly recover. May I point out also that conditions in a military hospital, where so much of a medical officer's time is taken up with routine duties, are such that my colleagues had only two or, at most, three hours a day for treatment. That is why, in answer to Dr. Slater's question, although 50% of our cases were curable only 20% were returned to duty. But many others were cured sufficiently to go back to full civilian work.

But I must confess astonishment when Dr. Slater objects to the definition of terms. He says: "Psychiatry has come to a sorry pass if problems of aetiology are to be solved by definition." How else are we to diagnose except by defining our terms? One of the greatest difficulties in psychological medicine is that psychiatrists use terms like "psychopathic personality" and "constitutional" (the terms in question) in such different senses, and to cover such different clinical entities, that confusion results. I tried to avoid this confusion by defining the sense in which I, at any rate, was using these terms. The definitions may be wrong; the method, surely, is correct.—I am, etc.,

J. A. HADFIELD.

Treatment of Depression in Later Life

SIR,—I have been interested in the article by Drs. Dalton E. Sands and William Sargant (April 25, p. 520), but I would like to point out that in their eagerness to take effective therapy out of mental hospital practice they leave the general reader with the impression that an attitude of "therapeutic nihilism" exists in our mental hospitals. The authors' sweeping statement that cases of depression are allowed to drag on for years in a state of avoidable misery can scarcely be permitted to go unchallenged.

The mental hospital psychiatrist is fully alive to "new treatments," enthusiastically evaluated at the outset but inevitably reduced to reasonable proportions as more experience is gained, and since the neuropsychiatrist is also carrying out these therapeutic procedures it should be noted that, in the absence of a mental-hospital-trained nursing personnel, there are obvious limitations and dangers. The malarial treatment of G.P.I. is a case in point.

Much active therapy of the depressions is, in fact, being carried out in our mental hospitals, although the wartime reduction of medical staffs has rendered this increasingly difficult. Nevertheless excellent facilities are available, especially since new admission units and out-patient clinics have been established whereby early cases can be admitted as voluntary patients.

In our experience convulsive therapy shortens the duration of recoverable mental depression and constitutes the most effective treatment yet evolved for cases of involutional melancholia. During the past 12 months we have in this hospital treated many patients with electric convulsions, and among them I find 46 cases of depression between the ages of 40 and 69. Of these, 25 have been discharged home, 11 are still under treatment but likely to be discharged shortly, 7 are improved, and 3 remain unchanged.—I am, etc.,

West Riding Mental Hospital. F. T. THORPE.

SIR,—Drs. Sands and Sargant have obtained excellent results in the treatment of depression in later life by convulsion therapy, which I am sure can be confirmed from many hospitals. In America leukotomies have been performed with good results for this form of illness. The operation is increasing in popularity in this country, and the work of Drs. Sands and Sargant is timely in supplying evidence to contraindicate this more severe procedure until a course of convulsion therapy has been given.

Before drawing their conclusions the writers say that if the problem is to be solved satisfactorily facilities for treatment away from certified patients will have to be widely extended through the country. The only problem to which they refer is that of when to begin treatment, but it appears that their real difficulty is where it should be done. They make a division of their depressives into those who are little trouble to nurse and those who need much supervision, but the reason why the segregation from certified patients will have to be widely extended through the country is not clear. The paper reads as if the one division is to be treated in the "ideal" conditions of the E.M.S. hospital and the remainder should be allowed to go to the mental hospital to mix with the despised certified patients. Clearly this is not a helpful attitude towards promoting mental health. It has been said, whether one agrees or not, that a voluntary patient should be certifiable; certainly I believe that a certified patient should be transferred as soon as possible to the voluntary status; thus in the modern reception blocks of mental hospitals with adequate facilities for classification the question of status during early treatment does not warrant the importance placed upon it by these writers.

Next there is the most extraordinary statement. The writers are going to solve their peculiar problem "by allowing clinicians greater latitude inside mental hospitals." Is one to suppose that the people who see only a small proportion of the many such cases treated, who have to send their agitated, suicidal, and difficult patients from their care to be nursed elsewhere, who only (very rightly) treat the mildest cases with the best prognosis, and who do not see the failures of treatment or the long-standing cases, are the clinicians who would be "allowed greater latitude inside mental hospitals" to teach their staffs how to give convulsions or to diagnose depression? If not, who have they in mind?—I am, etc.,

Netherne, Surrey. E. CUNNINGHAM DAX.

Inefficient Steam Sterilization

SIR,—With reference to the annotation in the *Journal* of April 18 (p. 500), the penetration by heat of a bundle in the steam sterilizer can be checked by the method of K. Black, who uses small pieces of fusible metal (*Journal*, 1935, **1**, 157). A set of pieces consists of four little tablets of fusible metal on a card, fusing at 95°, 100°, 110°, and 120° C. respectively, placed in the middle of the bundle. The method is effective, convenient, and cheap, but, of course, shows only the temperature, not the humidity. The details of the tubes used by A. G. Gadd and A. W. Turner (*J.R.A.M.C.*, 1942, **78**, 1) are not described by them, and it is not clear whether their tubes have the advantage over Black's method of showing humidity as well as temperature.—I am, etc.,

Oxford. E. G. T. LIDDELL.

Vitamin C and Transported Cooked Meals

SIR,—Further to my previous communication (April 18, p. 506) on this subject I desire to state that on examination of the vitamin C content of vegetables obtained from the "hot-plate" containing food for school children, the following amounts of ascorbic acid (vitamin C) were found here on April 22: potato, 2.5 mg. per 100 g.—i.e., approx. in 3½ oz.; swede, 2.3 mg. per 100 g.—i.e., approx. in 3½ oz. If we take it that each child would consume 7 oz. of potatoes and 7 oz. of cooked vegetable this would mean that each child would be obtaining from the dinner somewhere about 10 mg. of vitamin C. Other items of the diet would probably contribute the following amounts: milk, 3 to 4 mg.; jam, about 1½ mg. The figure for milk is based on Fixon and Roscoe's estimate of 0.3 to 2.89 mg. of vitamin C in cow's milk (raw). The total amount, therefore, of vitamin C in the diet would be approximately 15 mg. per day, as few of the school children get fruit. Further samples examined on April 29 had the following vitamin C content per 100 g.: cooked carrot 2.55 mg., cooked potato 0.44 mg., raw swede 28.6 mg., raw carrot 5.6 mg. No vegetables other than potatoes, swedes, and carrots have so far been served (since April 20, when meals began).

Now as to the amounts necessary. J. B. Youmans in his book on *Nutritional Deficiencies*, just published, states: "Recently studies based on newer biochemical tests to determine amounts needed to maintain a normal body store have indicated amounts considerably larger than those suggested in the past. On the basis of these studies a fair to good but not

'luxus' intake for infants would be 20 to 50 mg. daily, for children 40 to 100 mg., and for adults 50 to 100 mg. Expressed on the basis of weight these are in the range of 4 to 10 mg. per kg. (2.2 lb.) for infants and 0.8 to 1.6 mg. per kg. for adults, with children between." From these figures the amount of vitamin C likely to be in a school child's diet, even if we take it at 20 mg. per day, would be lamentably short. The advice, therefore, contained in Sir Wilson Jameson's broadcast on April 22, to take raw vegetables with dinners, would appear to be very appropriate, and it is sincerely trusted that his advice will be followed generally and by all those who are responsible for providing meals for school children. As regards others, such as Service men obtaining meals from canteens, the Chief Medical Officer's advice would seem to be no less sound.

Further examinations of the content of vitamin C in school meals will be carried out here; they have been made by the Medical Research Department of Manchester Royal Infirmary. It is hoped that Dr. S. W. Swindell's efforts to improve the vitamin C content of canteen meals as per his letter (April 11, p. 479) will bear fruit. In my letter in your issue of April 18 "6% to *nil*" should have read "16% to *nil*."—I am, etc.,

E. H. M. MILLIGAN,
Glossop. Medical Officer of Health.

Scabies Notification

SIR,—The question of notification of scabies has been referred back by the Council of the B.M.A. to the Public Health Committee for its further consideration (*Supplement*, April 18, p. 61). Out of the Scabies Order a considerable amount of information is being accumulated which bears on this very point, and the following observations based on the recent experience of this department and quoted by permission of Dr. J. A. Charles may be worth recording.

Of the information which has so far reached this department under the Order 85% has arrived along the authority's ordinary lines of communication with the public—e.g., school medical, maternity and child welfare services, hospitals, clinics, and so on. The balance of 15% has arrived from medical officers of the fighting Forces or from private doctors in the first instance, but in almost every case in this group the household would have been ascertained by one or other of the health services in due course. The composite net of these services now casts so widely through the community that only two types of household, so it seems, are liable to be missed: (*a*) Households of a small and decreasing upper social class in which the incidence of scabies is any way at its lowest and is rarely a public menace. (*b*) Households in which there are no occupants at or below school age; not a very large group of the community.

Experience is indicating that the majority of infected adults do not, for very good reasons, seek medical advice, and under compulsory notification I believe that a large proportion of Group (*b*) would remain unrevealed, since self-notification of any notifiable disease, though a statutory requirement, is more honoured in the breach. Incidentally, it is the factory medical officers who now have the greatest access to this latter group, and it is to be regretted that they are diffident on ethical grounds about giving information under the Scabies Order. I submit, therefore, that the extra yield from notification, in contrast to the present procedure, would be small and economically unjustifiable.

After all, for the purpose of the Order, health departments require information of only one case in a household, and thereafter their researches into the household should be able to provide all the material required for statistical investigation or indication of the epidemic trend of scabies in their area. Such being the case, statutory notification of the first case in a household might appear to be of some value; in practice I suspect that each age group in a household would be ascertained by a different doctor, and in consequence such a scheme would result in either duplication or neglect of notification. Lastly, the absence of any immunity in scabies, with its accompanying problem of whether many a suspect is a cure, or a relapse, or a recurrence, renders notification of individual cases a hazardous undertaking: though given even a nominal notification fee there are families whose notification rights would have more than a speculative value for an enterprising doctor.

I plead for an extended trial of the Scabies Order, which appears capable of producing economically a reasonable percentage of all the human and statistical material, and probably as much of it as most health departments are at present able to tackle.—I am, etc.,

Health Department, Newcastle-upon-Tyne. IAN E. MCCRACKEN.

"Porphyrinuria" in T.N.T. Poisoning

SIR,—The article by Prof. A. M. Kennedy and Mr. John Ingham (April 18, p. 490) on porphyrinuria in trinitrotoluene poisoning describes a test applied to urine in which the reaction is judged to be "positive" or "negative" by the quantity and colour of the precipitate, and the colour of the supernatant fluid, resulting when such urine is boiled with 10% (by volume) final concentration of sulphuric acid. They state: "It enables us to say quickly whether or not in the urine of any T.N.T. worker porphyrin pigments are present in excess."

The porphyrins are known to be relatively stable, even dissolving without change in concentrated sulphuric acid, and by virtue of their basic characteristics they form, with mineral acids, salts which are readily soluble in water. Mesoporphyrin hydrochloride is an exception, indeed, in being sparingly soluble in 2.5% hydrochloric acid; but this porphyrin does not occur in urines, either normal or pathological. From chemical considerations, therefore, it is not to be expected that the precipitate formed by boiling equal volumes of urine and 20% b.v. sulphuric acid would contain the urinary porphyrin.

The following experiments have been performed which demonstrate that, whatever its relation to the clinical condition of the patient, the test described by Kennedy and Ingham affords no indication of the porphyrin content of urine:

(*a*) Kennedy and Ingham's test was carried out on a normal urine (control) and on a second 50-c.cm. sample of the same urine to which 50 γ of coproporphyrin had been added, equivalent to 30 times the maximum normal concentration. There was no difference in the result; in each sample a slight brownish precipitate was present surmounted by a deep brown fluid. The colour of the supernatant from the urine containing added porphyrin was no different from that of the normal urine.

(*b*) 50 c.cm. of a pathological urine from a case of obstructive jaundice with hepatic insufficiency, estimated to contain 50 γ of porphyrin in that volume, was boiled with sulphuric acid. Next morning the dark-coloured precipitate was removed on the centrifuge. The supernatant fluid was then treated with potassium acetate until neutral to Congo red, and the porphyrin was extracted from it by shaking with ether. The extract contained 57 γ of porphyrin—i.e., the entire quantity present in the sample taken. Examination of the precipitate showed it to be free from porphyrin as expected.

These observations obviously do not touch the question whether porphyrinuria occurs in T.N.T. poisoning. What they show is that the appearances described by Kennedy and Ingham, whatever their cause, are not due to porphyrins. Any interpretation of their significance which assumes that they are so is therefore apt to be misleading.—I am, etc.,

London, N.W.3. C. RIMINGTON.

Pneumococcal Septicaemia

SIR,—It was with great interest and amazement that I read the article by Dr. H. W. Hales on pneumococcal septicaemia (April 18, p. 495). The article is epoch-making, for it holds out hope to those who fall ill with such a desperate condition as pneumococcal septicaemia. Furthermore, it is to be noted that Dr. Hales's case was not an ordinary septicaemia with a few colonies per c.cm. of blood but an extraordinary heavy infection. He states that a blood count showed the counting chamber swarming with pneumococci. Let us suppose that the count was done in the usual way by diluting the blood 200 times and counting in the Thoma-Zeiss chamber. For the organisms to be described as swarming we may take it that there were about a pair of pneumococci per small square. If this were true, then the number of organisms per c.cm. of blood would be $2 \times 200 \times 4,000 \times 1,000$, which equals, I believe, 1,600,000,000. Such a profusion of pneumococci in the blood was, previous to Dr. Hales's article, almost pathognomonic of death. Now we know differently.

I will not do more than mention what a pity it is that in the treatment of this condition we are unfortunately limited by the

lack of grapes, oranges, and pears. Perhaps, and I suggest this very tentatively, this shortage could be neutralized by using sulphapyridine in the colonic lavage instead of potassium permanganate.

The world has long awaited the aetiology of glandular fever. Can it be due to pneumococcal septicaemia? Can the possibility of this be considered when the only evidence brought forward in the article is two blood counts showing some monocytosis towards the close of an acute illness treated with sulphapyridine? This is a frequent occurrence in such circumstances, but such is the blindness of man that he misses the obvious and searches for the obscure. Perhaps the author has at last tracked the wily agent of glandular fever to its lair.

The temperature charts are interesting in that they show such a close relationship between the rectal and oral temperatures. Finally, when Dr. Hales states, "The need for wider national provision of clinical research facilities is indicated," after reading his paper I agree with him.—I am, etc.,

London, E.1. JOHN B. PENFOLD.

Intravaginal Packs

SIR,—I do not think the statement of Dr. Mary Barton in her interesting and very practical communication on intravaginal packs (April 25, p. 524), that the importance of rupture of the hymen "has only forensic significance," should be allowed to pass unchallenged. I can hardly imagine that Dr. Barton would have made a statement like that had she had experience of the work of a female V.D. clinic. Evidence of risk of infection is an important link in a chain of evidence where the history is misleading or bacteriological reports are inconclusive. Further, what useful advice about their daughters can one give to anxious mothers unless there is conclusive evidence as to the mode of infection?

I trust that medical men will steadily oppose the use of any intravaginal pack that is likely to cause laceration of the hymen. —I am, etc.,

NOEL F. ROWSTRON,
Director, Sunderland V.D. Clinic.

SIR,—I was interested in the article on intravaginal packs by Dr. Mary Barton. In describing the various advantages of the internal pad (tampon) she writes: "Lastly, it [the tampon] is readily disposed of." As medical officer of health of a good-class urban district I would like to tell of an experience we have lately had bearing on this remark by Dr. Mary Barton.

In a certain part of the area we have had to instal electrical pumps for the sewage of this area, there not being sufficient gravitation otherwise. Recently the apparatus was thrown out of gear and serious damage done to the chamber and various parts. The air-pressure valve had been choked and blocked by several of these tampons being sucked or forced into the aperture of the valve and leading to its loss of function and consequent derangement of the whole apparatus. The council concerned referred the matter to me, and I have taken certain action, but obviously the cure is not so simple. Certainly Dr. Barton's statement, in this case anyhow, will need qualification.

As regards the advantages enumerated and also the disadvantages, I am rather of the same mind as Dr. Mary Cardwell, whose letter on the subject appears in the same issue. Particularly in the case of young girls I think the less interference manually the better. What is, after all, a natural secretion is naturally seeking the outlet which Nature has provided, and any hindrance is akin to the "accident" which I have mentioned in the pumping apparatus. It may cause serious trouble in later life.—I am, etc.,

Manchester. D. I. CONNOLLY.

Complacency in Anaesthetics?

SIR,—Arising from Dr. John Elam's interesting letter (April 18, p. 508) is the interesting and important speculation on the matter of what drop, if any, has occurred in the anaesthetic mortality rate taken over the last fifty years of progress in this branch of medicine.

The figures that he quotes, taken into consideration with Mr. Hamilton Bailey's list of anaesthetic incidents, leaves the impression that, although the progress of the science of anaesthesia has made life more comfortable and interesting for the anaesthetist, the dangers which still exist for the patient have not diminished in the proportion one might expect. In spite of making the giving of anaesthetics another specialty in medicine, and the wholesale appointment of specialist anaesthetists, the founding of a diploma for them, the purification of the necessary drugs, and the enormous advances made in the construction of anaesthetic machines, the depressing fact remains that, according to Dr. Elam's figures, for every thousand anaesthetics given more than one will have a fatal issue on the table, and there will be many close shaves and some deaths occurring in the first few days which may be attributed to the anaesthetic.

With regard to the inhalation anaesthetics, it would be most interesting to know what percentage of the fatalities occurred from the use of a modern complicated machine and what from the old-fashioned and rather derided mask-and-bottle method. Was the mortality in the days of exclusive use of the latter method greater than 1.8 per 1,000?

The modern McKesson is a beautiful thing to behold, a development worthy of the advanced mechanical age in which we live, and no hospital wishing to be thought modern and worthy of the population which it serves can afford to be without one or an instrument of similar size and expense. No one would dispute that such an instrument needs a specialist to work it efficiently, and its very existence in a hospital justifies the services of a professional anaesthetist. But has its creation materially lowered the mortality associated with anaesthesia? Are there any figures taken over some thousands of cases which reassure us on this point?

If a machine is needed for face and throat work, can anything be more satisfactory than the old simple Boyle machine, when a single glance at the bubbles of N_2O and O_2 flowing through the bottle gives all the mechanical information required? I feel that any apparatus that takes one's attention from the patient for more than a few seconds during the induction is unsafe for general use. Unfortunately the present-day student may do his anaesthetic clerkship without ever seeing a mask-and-bottle anaesthetic. He may qualify knowing nothing about the backbone of anaesthesia, but a dangerous little about many fine machines. In a leading London teaching hospital I did my anaesthetic clerkship without ever seeing a mask-and-bottle anaesthetic. I had to learn the art when doing a locum at a Welsh public assistance hospital a week after qualifying. How many thousands of chloroform anaesthetics are given yearly by single-handed G.P.s to women in labour, when after inducing the patient they have to go round to the other end and apply forceps? Do one in a thousand die?

The purpose of this letter is to inquire whether it is possible to produce figures which prove or disprove the unstatistically supported claim of many that the simpler the anaesthetic and the simpler the mode of giving it, the safer the whole business is for the person most concerned—the patient.—I am, etc.,

St. Ives, Cornwall. E. C. ATKINSON.

What is a "Truby King" Baby?

SIR,—Unfortunately Dr. A. G. Watkins's letter under this heading (April 4) has only just come to my notice. Late as it is, I must ask space to defend what, to me, seems an unjust and surely biased attack on the Mothercraft Training Society, founded by and following the teaching of Sir Frederick Truby King.

First, there is no such thing as a "Truby King baby." A baby belongs to its parents and is managed and fed by its mother. The health and welfare of an infant depend upon its inheritance and upon how it is brought up. So often a baby is referred to as being this, that, or the other sort of baby. In reality it belongs to its mother alone, and she has been advised by this, that, or the other person. Often the mother hastily borrows a title for her offspring as an escape from her own shortcomings. In his sweeping criticism of the "Truby King baby" it would seem that in his sphere as a paediatrician Dr. Watkins has fallen into the trap.

He rightly states that the practice of breast-feeding is not the monopoly of Truby King, but what he fails to recognize is the great pioneer work that Truby King did in New Zealand originally, and later in this country, in teaching the technique and management of breast-feeding. The infant mortality rate

in New Zealand (the lowest in the world) is due directly to Truby King's teaching; on this there can be no argument, as in New Zealand the Truby King clinics are universal and unopposed. Truby King was always bitterly opposed to any form of artificial feeding, but maintained that if abnormal feeding had to be resorted to it should be as near the normal—i.e., breast milk—as possible. He insisted in particular that the protein ratio should not be varied. I am aware that the protein question is controversial, but whatever the theories I have never in my large experience of the Truby King method of infant feeding known a baby (I am talking of the normal baby) show signs of lack of protein. I have known a good many show signs of intolerance to too much protein. If Dr. Watkins would visit the Cardiff Truby King clinic, of which he is on the medical advisory board, I am sure he would find my statement to be correct.

With regard to the necessary additions to the Truby King artificial feeding, is there any sound system of artificial feeding which does not require "additions"? The charge that this produces "negative" toddlers is surely a gross misstatement. I agree entirely with Dr. Watkins that medical practitioners should know more about preventive child health. The fault lies with medical education.

Prof. Charles McNeil's article in the same issue of the *Journal* is a most instructive exposition on the needs of this country with regard to child health. The Mothercraft Training Society has for the last 24 years, in ever-increasing volume, been doing precisely the work that Prof. McNeil advocates—namely, giving nurses a sound training in mothercraft and infant management, and through these nurses in the home and in the clinic passing their knowledge on to those mothers whose babies very likely in course of time would otherwise have helped to fill the beds of the children's ward of the nearest hospital. If doctors were better educated in child health the demand for mothercraft clinics would be greater, not smaller, and the co-operation of the two would be to the advantage of both and, more important, to the mothers and babies.—I am, etc.,

Brighton. JOHN THWAITES.

The Midwife and Child Health

SIR,—I have been interested in the article by Prof. Charles McNeil on child health in Holland, England, and Scotland (April 4, p. 429). Much may be learned from a comparison of the three countries, but I was very much astonished that no allusion was made by the author, your leader (p. 442), or the letters in the *Journal* of April 18 (p. 504) to the importance of the work of midwives in this field. In Holland midwives were given an important position in the health services many years before their right place in the maternity service was accorded to English midwives, whose share in the lowering of the infant death rate has been recognized by the authorities in a way that, according to my information, has not yet occurred in Scotland, where the midwife as a responsible practitioner is much less considered.

It has been stated lately that in England and Wales 90% of births are attended by midwives, who are solely responsible in 65% of the cases. During their training in midwifery they receive special teaching in infant feeding and the importance of instructing the mothers in it. Over 90% of babies are breast-fed when the midwife leaves at the fourteenth day, but of these many are weaned before they go to infant welfare centres or are visited by the health visitor. Midwives know how great is the mother's ignorance and at the same time her anxiety and desire to do the right thing for her infant. The proper establishment of breast-feeding and, in the rare cases in which this is impossible, a satisfactory alternative indicates the need for supervision by the midwife for a month instead of the present statutory fortnight.

Prof. McNeil states that for the purpose of reduction of the infant death rate the prevention of infection in infancy by improved domestic hygiene and the improvement of infant feeding, especially in the first month of life, should be the two main objectives. I maintain that one of these—that of improvement of infant feeding—could be put into practice at once if the responsibility for supervision by the midwife were extended to cover that first month of life which is so vitally important. This is a reform for which midwives, through their professional organization, have long been asking, and I hope that the influence of your powerful *Journal* in favour of it may be brought to bear in necessary quarters.—I am, etc.,

E. M. PYE,
President, College of Midwives.

Planning

SIR,—The letter of Dr. A. D. E. Bayliss (April 25, p. 539) puts a point of view which is being advanced strongly at the present time and which has enough superficial justification to appear weighty. It is therefore important that the case for the planners should be given equal prominence, and for that reason I venture to put forward the following points.

1. Every organization concerned with planning realizes that the final form of those plans will depend upon considerations and developments which will not be clear until the war is over. No suggestion has been made of the preparation of a hard-and-fast scheme of any kind at the present moment.

2. It follows that no irrevocable action will be taken during the war which will prejudice those members of the profession who are now in the Services. Moreover, a considerable proportion of Service medical officers are still in this country and able to keep in touch with planning proposals.

3. Planning must not be hasty, but must be preceded by close and thorough study of the problems involved. If such study is postponed until after the war planning will be seriously delayed and hampered.

4. The last war showed that the first years of peace are permeated by the twin moods of war-weariness and exultation, either of which is fatal to constructive planning.

5. This war, even more than the last, is likely to be followed by a cry for retrenchment and economy, with considerable agitation for reduction in the social services. The medical profession must be prepared to put forward its case against such moves, and can only do so if it begins to prepare its case now.

6. The war has brought up in acute form certain special problems of medicine and medical sociology which require the most careful consideration if they are not to become grave wartime and post-war dangers. These call for urgent attention. A single instance, that of the group of difficulties arising out of the industrial employment of married women with its implications for both mother and child, should sufficiently emphasize this point.

7. It is no use winning the war if we are to lose the peace. The country will face war and its hardships and sacrifices far more cheerfully if it can have an assurance of post-war aims which substitutes the positive aim of a better Britain for the negative one of a defeated Germany.

I agree that our plans will come to nothing unless we win the war, but I have yet to find a single individual planner or planning organization who is allowing planning to interfere with the war effort. It is true that planning by itself is not enough, but study and planning in their proper place and proportion are essential parts of wartime work.—I am, etc.,

JOHN D. KERSHAW,
Accrington. Hon. General Secretary, Child Health Planning Group.

"Hooch" Poisoning

SIR,—With reference to cases of fatal or serious illness following the use of "doctored" whisky may I draw attention to one or two facts.

During the "prohibition" period in the U.S.A. there was much outcry about wood alcohol and its disastrous effects. Drs. Bigelow, Lythgoe, and Hunt for the Government made analyses of 8,815 samples; only eight contained any wood alcohol (methanol), but they found many cases of a very high ethylic alcohol content: in one liquor it was 80% and in two others 60%, and no other alcohol was present.

In our own country I had some samples of "ruby wine," "red wine" (the so-called "red biddy") analysed; in one sample from Reading no less than 17% by volume (ethylic alcohol) was found. In the North of Ireland and, I believe, in Scotland analyses failed to find methyl alcohol. The trouble was due to the fact that men and women were drinking these highly alcoholic liquors in partial ignorance of their strength. "Hooch" may be, and probably is, another variant of "red biddy."—I am, etc.,

Pershore. COURTENAY C. WEEKS.

Rationing of Fuel

SIR,—The medical profession would do well to put in a word against the proposed rationing of fuel. Cold is the friend of infectious disease, an epidemic of which is always liable to accompany a long war. An empty grate or a cold oven is likely to be the last straw in breaking physiological resistance to a virus or bacteria, and there seems to be little save such resistance between the population and a serious epidemic of influenza. It is well known, too, that typhus infection is aggravated by excessive heat loss; in this connexion it must be remembered that fuel rationing will induce people to huddle together, to reduce ventilation, and to use less hot water for washing purposes, thus inviting further the spread of disease. Are we going to witness the spectacle of cold ushering in an epidemic in a country rich in coal? Must miners shoulder arms instead of picks when an adequate coal supply is just as necessary as food? Is Parliament helpless to put the miners where they belong? In the interests of public health medical men require answers to these questions.—I am, etc.,

Oxford. R. L. WORRALL.

The Services

Temp. Surg. Lieut. J. D. Bradley-Watson, R.N.V.R., has been mentioned in dispatches for bravery and initiative.

CASUALTIES IN THE MEDICAL SERVICES

Major ANDREW WILLIAM PALETHORPE TODD, M.C., R.A.M.C., who is included as "Died" in an Army Council Casualty List published on April 22, was educated at the University of Dublin, where he graduated M.B., B.Ch., B.A.O. in 1915. He served in the war of 1914-18, and was awarded the M.C. for services described in the *London Gazette* as follows: "During an attack this officer, who was stationed at the advanced collecting post, behaved with great gallantry under the heavy artillery fire to which his post was subjected at frequent intervals during the day. He dressed and attended to large numbers of wounded men with unremitting devotion to duty, and also went forward under heavy fire with stretcher-bearers to the aid posts, and by his able leadership rendered valuable service in evacuating the wounded." He remained in the R.A.M.C. as captain until 1922, when he went to live at Moneymore, Belfast. In 1926 he moved to Holsworthy in Devonshire, where he stayed until 1930, and then took a post as a ship surgeon. In 1934 he was appointed part-time medical officer of health for the Wimborne Urban District, and on the outbreak of the present war was recalled for service as capt. in the R.A.M.C.

Capt. ROBERT NEILSON, R.A.M.C., who died at Rutherglen on April 20, was the elder son of Mr. and Mrs. T. H. Neilson and was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1933. Before the war he was in practice in Hall Green, Birmingham. In January, 1941, he entered the R.A.M.C. as temp. lieut. and was recently promoted. He leaves a widow.

The death is announced of Capt. DAVID YELLOWLEES, R.A.M.C., in the Middle East in April. He was born on Jan. 15, 1916, the elder son of Dr. and Mrs. David Yellowlees of Glasgow, and was educated at the University of Glasgow, where he graduated M.B., Ch.B. in 1938. He held the posts of house-surgeon and house-physician at the Western Infirmary, Glasgow, before entering the R.A.M.C. as temp. lieut. in Jan., 1940. He was promoted a year later, and was posted to the Middle East at the end of last year. He had been a member of the B.M.A. since qualification.

Prisoner of War.—Capt. F. H. Haine, R.A.M.C.

Missing.—Major J. W. D. Bull, R.A.M.C., Capt. A. W. Chester, R.A.M.C., Capt. T. R. S. Cormack, R.A.M.C., Capt. H. W. Cowen, R.A.M.C., Lieut. R. H. Cuthbert, R.A.M.C., Capt. J. F. Fisher, R.A.M.C., Capt. D. W. F. Gotla, R.A.M.C., Capt. L. Sefton, R.A.M.C.

DEATHS IN THE SERVICES

Lieut.-Col. ALFRED CHARLES ELLIOTT, R.A.M.C. (ret.), died in Nottingham General Hospital on March 20, aged 60. He was born on Nov. 21, 1881, and educated at Trinity College, Dublin, where he graduated M.B., Ch.B., and B.A.O. in 1906, and entered the R.A.M.C. as lieut. on Jan. 28, 1907. After retirement he was employed at Nottingham. He leaves a widow. He served in the war of 1914-18, and was mentioned in dispatches in Jan., 1916.

Obituary

We regret to announce the death on April 13 of Dr. RICHARD DESMOND FITZGERALD, *M.C.*, late Director of Medical Services, Straits Settlements, and Adviser to the Medical Service of the Malay States, who was formerly principal medical officer to the State of Johore. Dr. Fitzgerald entered Trinity College, Dublin, as a medical student in 1903, and graduated B.A., M.B., B.Ch., B.A.O. in 1909, proceeding to the M.D. in 1922. He held the certificate of the London School of Tropical Medicine and the D.T.M.&H. of Cambridge. During the last war he served with a temporary commission in the R.A.M.C., and was awarded the Military Cross and the Order of St. Sava (4th class). He joined the B.M.A. in 1911, and acted as representative at the Cardiff Annual Meeting in 1928.

Dr. CARL JOSEPH BARRETT BUCHAN, who died on April 22 at Grove Park, London, S.E., was for some years an active worker in the British Medical Association. Born in London in November, 1886, he was educated at Glasgow High School and the University of Glasgow, where he graduated M.B., Ch.B. in 1909 under his former name of Buckheim. For the next two years he held house appointments at the Glasgow Maternity Hospital and the Western District Hospital, Glasgow. He served with a temporary commission in the R.A.M.C. during the greater part of the last war, spending two years in France. Dr. Buchan joined the B.M.A. in 1912, and had been honorary secretary and chairman of the Lewisham Division, which he represented at four Annual Meetings. He was also for five years joint honorary secretary of the Metropolitan Counties Branch, and held office as honorary secretary of the Section of Medical Sociology at the Annual Meeting of 1925. Early in the present war he was appointed chairman of the Lewisham Medical Board under the Military Training Act, 1939.

Universities and Colleges

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a meeting of the College held on April 30 the following were elected Fellows:

Sir John S. B. Stopford, M.D. (Manchester); T. Percy C. Kirkpatrick, M.D. (Dublin); R. I. Lee, M.D. (Boston, Mass., U.S.A.); Ernest Jones, M.D. (London); J. W. Trevan, M.B. (London); C. D. S. Agassiz, M.D. (London); L. Cunningham, M.B. (Liverpool); S. W. Davidson, M.D. (Newcastle-upon-Tyne); D. G. Leys, M.D. (Inverness); F. H. K. Green, M.D. (London); E. B. Jones, M.B. (Adelaide); B. C. Tate, M.D. (Birmingham); H. H. Hyland, M.B. (Toronto); J. W. Brown, M.D. (Grimsby); W. G. Oakley, M.D. (London); A. W. Franklin, M.B. (London); F. Forman, M.D. (Capetown); J. B. Kirk, M.B. (Accra); G. O. Lambert, M.D. (Reading); J. B. Harman, M.D. (London); R. A. Willis, M.D. (Prahran Victoria); R. R. Bomford, M.D. (London); J. H. Palmer, M.D. (Montreal); Group Capt. H. W. Corner, M.D. (R.A.F.); W. D. Newcomb, M.D. (London); G. P. Wright, M.D. (London); R. M. Stewart, M.D. (Watford); E. H. R. Harries, M.D. (London); F. I. Apperly, M.D. (Richmond, U.S.A.); R. V. Christie, M.D. (London); S. Cochrane Shanks, M.D. (London).

Dr. H. E. A. Boldero was elected Registrar of the College, and Dr. J. D. Rolleston a representative on the committee of management of the Chelsea Physic Garden.

The following candidates, having satisfied the Censors' Board, were admitted Members:

R. I. S. Bayliss, M.B., K. W. Cross, M.B., E. L. Frankel, M.B., Surg. Lieut. A. C. C. Hughes, M.B., R.N.V.R., A. Jordan, M.B., C. W. Kesson, M.B., A. B. Kinnier Wilson, M.B., Flying Officer R. M. Miller, M.B., R.A.F.V.R., W. L. Ll. Rees, M.B., N. Southwell, M.B., M. Steel, M.B.

Licences to practise physic were conferred upon the following 261 candidates (including 30 women) who had passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and have complied with the necessary by-laws:

J. W. Abbiss, R. J. Alcock, B. C. E. Aldous, Gwladys V. S. Aldridge, M. S. Aldridge, J. G. U. O. Alexander, A. R. Allardice, R. M. Archer, D. L. Arnold, A. E. M. Ash Wiggins, R. Aspinwall, J. N. Aston, G. Auckland, I. Ball, J. C. Ballantyne, J. R. Ballantyne, G. F. Barnes, A. E. Barrett, D. Bartlett, Anita M. Beck, G. A. Bedwell, Eileen L. Bell, N. E. Bennett, J. F. R. Bentley, A. M. I. El Bey, A. W. Blackwell, D. H. Bone, R. D. Brown, Angela J. Brayn, B. F. Brearley, R. S. E. Brewerton, J. G. Brockis, V. R. Bruce, P. J. Bryce-Curtis, H. A. Buck, E. W. C. Buckell, I. W. Burski, H. W. Bunn, D. L. C. Burden, L. E. Burkeman, Joyce M. Burt, Sheila M. Burt, L. J. H. Burton, P. J. C. Burton, N. R. Carlson, D. J. Carter, J. R. Carter, R. D. Chalmers, W. R. H. W. Chambré, N. Clarey, G. B. Cliff, H. V. Cockburn, F. J. Cockersole, Audrey Coghlan, Jessie Collinson, N. D. Compston, F. K. Crittenden, H. V. Cross, R. E. Danckwerts, C. M. Dave, D. C. Davidson, J. A. Ll. Davies, B. T. Davis, A. E. R. De Silva, D. B. Doran, J. W. L. Doust, G. W. Downes, A. W. N. Druitt, R. A. H. Dubery, P. W. Edward, H. Edwards, Mary E. Egerton, Mary R. Ellis, F. G. Elvins, D. W. Evans, P. R. C. Evans, W. F. Felton, Marie Fischer-Ascher, J. D. Fisher, J. L. Fison,

J. A. S. Forman, T. B. Forrest, R. Franey, I. Friedmann, J. C. Fulford, K. C. Fulton, J. T. Furnival, F. R. Gaballa, M. F. Gallop, C. S. E. Gifford, C. E. J. Glaisher, H. J. Glanville, G. Gremson, E. J. Grierson, R. M. Griffiths, N. Hajdu, R. L. Hall, R. Hambridge, H. J. Harris, Mary M. Harrop, A. H. Haysom, Winifred M. Heaton, H. N. Heffernan, W. L. P. Hewerdine, R. H. Heyland, A. B. Hill, I. M. Hill, R. H. S. Hirst, E. O. Höhn, G. R. Holtby, P. W. Hopper, M. S. Howe, R. M. Howson, R. B. Hughes, R. V. Imundi, K. N. Inman, J. A. Irwin, D. G. Ismay, D. K. Jacobs, A. R. James, Christine J. T. Jamieson, H. Jelinek, B. A. G. Jenkins, C. F. Jobson, P. G. S. Johnson, I. F. B. Johnston, D. Ll. H. Jones, E. O. W. Jones, G. M. Jones, R. Keen, A. W. Kelly, J. E. Kerton, L. G. Kiloh, R. King-Brown, Martha Klein-Dynski, C. R. Knappett, K. D. Kumria, E. Lasserson, J. M. Ledingham, R. G. M. Ledingham, C. A. Leeson, K. T. Lockhart, J. D. Loughborough, A. Lyell, J. C. McDonald, E. V. Mackay, I. E. D. McLean, Vera J. McMullen, S. J. R. Macoun, A. D. McShine, E. Mandler, I. A. Marriott, Joan Martin, R. H. Martin, R. G. Mathers, J. F. Mawe, M. J. May, Christine M. Millar, A. R. Mills, F. A. Milne, B. B. Milstein, J. P. Mitchell, M. J. Mitchell, E. K. Morris, I. Morris, M. F. Moses, I. R. Moyle, Margit Muller, C. F. J. Muller, Joan V. Muller-Rowland, Barbara C. Mulvany, J. M. Munden, J. H. F. Mundie, J. B. Musgrove, D. H. Nelson, M. P. Nelson, P. G. L. Parry, Jov E. Patrick, C. E. R. Payne, D. J. H. Payne, A. Pearlman, J. R. B. Peckover, E. O. Pedersen, H. Pezeshgi, C. M. Phillips, H. G. Phillips, F. C. R. Picton, Joan M. Platts, H. P. Player, A. C. Porteous, Phyllis Poyner Wall, T. C. Prideaux, I. N. A. Pritchard, H. Riley, T. R. Riley, G. A. Robinson, R. H. M. Robinson, Millicent M. Rogerson, D. I. Rowlands, C. M. Ruben, R. H. Russell, G. T. Rutherford, F. W. E. Rutter, D. L. Sandes, M. Schiller, F. Schmelz, T. L. Schofield, D. L. Scott, E. Seal, M. R. Shirazi, Eleanor L. Skelsey, G. A. Smith, R. G. Spicer, V. G. Springett, P. Steiner, J. W. Stephens, D. Stern, D. I. Stirk, M. G. P. Stoker, P. B. Stones, P. Story, P. Stradling, W. S. Suffern, C. B. M. Swan, Joan Sykes, G. W. Taylor, L. G. Taylor, Margaret V. Teichmann, D. C. Thomas, G. E. Thomas, F. F. Tietze, W. P. Traub, P. R. Travers, J. Ungar, W. J. U Tin, J. K. Wagstaff, A. H. C. Walker, K. W. W. H. Walton, J. F. N. C. Ward-McQuaid, H. B. S. Warren, D. C. Watson, F. G. H. Watson, C. H. Watts, K. T. Weavers, M. H. West, R. West, Eleanor A. White, K. P. Whitehead, Nora F. M. Wilkinson, D. W. Wilks, A. H. Williams, E. Williams, H. O. Williams, R. I. Williams, G. M. Williamson, G. F. Willson, W. D. Wilson, M. Winternitz, T. R. Wooldridge, W. E. Yeates, A. W. O. Young.

Diplomas in Child Health were granted, jointly with the Royal College of Surgeons of England, to the 15 candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England published in the *Journal* of April 18 (p. 512).

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Museum lecture-demonstrations, open to medical practitioners and advanced students, will be given by Prof. A. J. E. Cave in the College (Lincoln's Inn Fields, W.C.) at 4 p.m. on Mondays, Tuesdays, and Fridays, May 11, 12, and 15, and May 18, 19, and 22.

Medical Notes in Parliament

Typhus Vaccination

On April 21 Mr. LEACH asked the Minister of Health what vaccine was used for the immunization against typhus fever of 12 members of the Kensington public health staff who were inoculated recently as part of a plan adopted, at the suggestion of his Department, for measures to control any epidemic of typhus that might break out; where the vaccine was manufactured; and if it was made from typhus-infected lice. Mr. BROWN: The vaccine used in this instance was Cox's vaccine. It was made at the Connaught Laboratories of the University of Toronto. The answer to the last part of the question was, No. The organisms were obtained from infected lice, but the vaccine was made from organisms grown on the yolk sac of eggs.

Tobacco-smoking in the Forces

During a discussion on the increase in the tobacco duties on April 22, Sir FRANCIS FREMANTLE referred to a letter in which Sir Maurice Cassidy had shown that serious injury was caused by excessive smoking in the Forces. Another independent and distinguished physician had agreed that gastric troubles were a direct result of heavy cigarette-smoking by members of the Forces. There was no evidence as regards heart trouble. Sir Francis argued that the Services should bear their share of the extra duty on tobacco. Sir KINGSLEY WOOD said he hesitated to make any observations on medical opinions. When Minister of Health he had sometimes been bewildered by the advice and opinions he received from medical authorities. The House approved the proposed increased duties.

Industrial Health Research

On April 22 Sir John Anderson, Lord President of the Council, received a deputation from the Parliamentary and Scientific Committee, led by Capt. Plugge, chairman, to discuss questions concerning industrial health research and its application in wartime conditions, with special reference to the scope and functions of the Industrial Health Research Board. The deputation included Mr. E. S. Salt, Mr. M. P. Price, Sir Francis Fremantle, and Mr. T. E. Harvey, also Dr. Douglas McClean and Mr. Weiner representing the Association of Scientific Workers.

Medical Man-power

Sir JAMES GRIGG, replying on April 28 to Sir Derrick Gunston, said that the allocation of doctors for the needs of the fighting Services, in relation to those of the civilian population, was based on a careful system of priorities worked out by the Medical Personnel Priority Committee set up by the Minister of Health, the Secretary of State for Scotland, and the three Service Ministers. These arrangements had, up to the present, enabled an adequate supply of doctors to be available for Service needs; but as the Army became further engaged in oversea operations its requirements would inevitably make additional demands on members of the medical profession, and it was the object of the committee to secure that these were met with the least possible detriment to the medical care of the civilian population.

Medical Man-power and Students' Training

In a reply to Sir Ernest Graham-Little on April 23, Mr. BROWN said he was not aware that pressure had been exercised by officers of the Central Medical War Committee on medical and licensing bodies to shorten the period of training of medical students in their final years owing to the scarcity of medical officers in the fighting Forces. The proposals for redistribution of medical man-power, detailed in Circular No. 2624 [*Supplement*, April 25, p. 66] had not been brought fully into operation. As the circular was issued on April 9, sufficient time had not elapsed for such action. Mr. Brown added that in the view of the Medical Personnel (Priority) Committee both redistribution of medical personnel and some curtailment of the period of medical training were necessary.

The "Burden of Parenthood"

Mr. IVOR THOMAS inquired on April 23 whether it was the intention of the Government to encourage an increase in the birth rate at present. Mr. BROWN said the question raised issues of profound significance, spiritual and social as well as economic. It had been the policy of successive Governments in fields much wider than that of the Ministry of Health to influence the national life and economy in favour of families with children. The income-tax allowances for children, the arrangements for the care of mothers and young children, the provision of free education and of school meals and school medical services, and the preference given to large families in the selection of tenants of municipal houses afforded familiar examples. This policy had been extended by war measures, such as increased allowances for children under the unemployment insurance and assistance schemes and for children of members of the Forces, Exchequer subventions towards the cost of bread and other staple foods, the extension of the school meals service, and the provision on an increasing scale of cheap or free milk and other protective foods for expectant mothers and young children. Moreover, children's clothing had been excluded from the scope of the purchase tax. These measures carried with them a substantial relief from the financial burden of parenthood. If Mr. Thomas desired to raise this national issue he should do so with those responsible for the Government as a whole.

Medical Officers in Government Departments

On April 28 Sir WALTER WOMERSLEY informed Sir Ernest Graham-Little that the Ministry of Pensions employed 196 whole-time medical officers. They were assisted in a part-time capacity as and when required by some 750 medical practitioners who were in the main engaged in civil practice. It was the definite policy of his Department to restrict the employment of whole-time medical personnel to the minimum and to make the greatest possible use of civil medical practitioners on a part-time basis. A number of whole-time medical officers had already been released for service with the Forces, and this policy would be continued so far as practicable.

Mr. BUTLER stated on April 28 that the number of registered medical practitioners employed at the Board of Education was 9, of whom 1 was temporarily seconded to the Ministry of Pensions. All these officers were employed full-time. It would be impracticable to employ civilian medical practitioners to inspect and supervise the work of school medical officers employed by local education authorities.

Alien Doctors

Mr. ERNEST BROWN, in reply to a question as to how many alien doctors were at present in this country, and how many were employed either in civilian practice or in the Services, stated that he was informed by the Central Medical War Committee that of 1,032 alien doctors in this country available for employment, other than those on the permanent *Medical Register*, 735 had obtained civilian medical employment or commissions in the medical branches of H.M. Forces.

Protection of Practices Scheme

Mr. BROWN said on April 29 that the Protection of Practices Scheme was founded on voluntary agreement between participating practitioners and not on statutory regulations. Legal effect had been given to similar arrangements in some areas by means of amendments of the Allocation and Distribution Schemes and terms of service of practitioners in pursuance of Regulations 3 and 23 of the National Health Insurance (Medical Benefit) Regulations, 1936, and Regulation 15 of the same Regulations as amended by the National Health Insurance (Medical Benefit) Amendment Regulations (No. 4), 1939.

Mass Radiography

Mr. BEVIN, on April 30, told Mr. Ridley that he had given careful consideration to the use of mass radiography for the discovery of pulmonary tuberculosis among men and women called up for the Services. He had received a further report from the Medical Advisory Committee under Lord Horder's chairmanship, which advised him on medical questions connected with the work of the medical boards. It was clear from the investigation that it would be impracticable to establish this method of examination at the medical boards. On the other hand, the concentration of Service personnel at suitable depots afforded an opportunity for carrying out these examinations to the extent that the necessary apparatus could be provided.

Milk Loss from Cattle Diseases.—On April 28 Mr. HUDSON informed Captain Peter Macdonald that it had been estimated that diseases of dairy cattle involved an annual loss of not less than 50,000,000 gallons of milk, as well as of appreciable quantities of meat. With a view to reducing such losses he hoped to introduce soon a voluntary scheme for the control of dairy cattle diseases, an important feature of which would be the regular veterinary examination of dairy cows.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week there was a rise in the notification figures for every notifiable infectious disease except acute pneumonia, in which there was no change, and cerebrospinal fever, in which there were 41 fewer cases than in the preceding week.

An increase of 330 cases was recorded for measles, notifications of which have been mounting during the past three months. Counties showing large variations from the totals of the preceding week were London, Middlesex, Durham, and Northumberland, with increases of 101, 108, 39, and 116 respectively; in Essex and Lancashire the notifications were 38 and 54 fewer than in the previous week. The largest totals recorded in administrative areas were those of Lancashire (Manchester C.B. 199), London (Wandsworth 94), Middlesex (Harrow U.D. 123, Heston and Isleworth M.B. 103, Ruislip Northwood U.D. 136), and Northumberland (Newcastle-upon-Tyne C.B. 227).

After falling for three weeks the figures for whooping-cough went up by 286. The totals for London, Middlesex, Essex, Staffordshire, Warwickshire, Lancashire, and Yorks West Riding were 75, 21, 25, 28, 37, 35, and 45 more than in the preceding week. The largest decrease was that of Kent—20 cases.

The notifications of diphtheria were 50 more than in the previous week. The largest deviations from the totals of the preceding weeks were increases in Warwickshire 16, Cheshire 20, Lancashire 15, Yorks West Riding 30, and a fall of 12 in Shropshire.

A rise of 88 cases was recorded for scarlet fever. The largest increases were those of Middlesex 23, Essex 20, Staffordshire 22, Warwickshire 25; in Lancashire 31 fewer cases were notified.

The 208 cases of dysentery—40 more than in the preceding week—made one of the biggest weekly totals for the past three years. The increase was due to the experience of Yorks West Riding, where the cases rose from 6 in the previous week to 72; 59 of these cases were notified in Bradford C.B., the remaining 13 being reported from seven administrative areas. The only other local outbreaks of any size were Middlesex, Southall M.B. 19, and Leicestershire, Leicester C.B. 9.

In *Scotland* 452 cases of measles were notified, compared with 218 in the preceding week, the increase being confined to Glasgow, where 296 cases—222 more than in the previous week—were recorded. During the past seven weeks 946 cases have been notified in this city.

Returns for the Week Ending April 25

The returns of infectious diseases in England and Wales included the following: scarlet fever 1,031, whooping-cough 1,672, diphtheria 750, measles 3,502, acute pneumonia 951, cerebrospinal fever 170, dysentery 185, paratyphoid 18, typhoid 8.

No. 15

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 18, 1942.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1942 (a)	(b)	(c)	(d)	(e)	1941 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	158	17	48	4	8	282	12	54	6	12
Deaths		—	4		1		2	4		
Diphtheria	786	37	216	44	28	883	49	215	19	29
Deaths	16	—	2	—	1	31	—	5	—	2
Dysentery	208	12	40	—	—	144	15	30	2	—
Deaths				—	—					—
Encephalitis lethargica, acute	5	—	—	—	—	3	—	—	—	—
Deaths							—			
Enteric (typhoid and paratyphoid) fever						26	2	28	4	5
Deaths						—	—	1	1	—
Erysipelas			48	9	1			45	5	4
Deaths										
Infective enteritis or diarrhoea under 2 years	4	41		25						
Deaths	44	7	12	15	1	30	1	9	9	5
Measles	4,087	388	452	146	57	13,030	355	136		5
Deaths	3	1	1	3		19	—	—	—	
Ophthalmia neonatorum	108	4	19	2	—	68	5	37		1
Deaths										
Paratyphoid fever	8	1	—							
Deaths	1	—	—		—					
Pneumonia, influenzal*	1,089	58	9	5	—	944	39	14	6	13
Deaths (from influenza)	36	4	—	1	1	53	2	5	—	1
Pneumonia, primary			341	27			—	308	12	
Deaths			—	12	14		38		13	12
Polio-encephalitis, acute	1	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	3	—	2	—	1	4	—	4	1	—
Deaths		—					—	—		
Puerperal fever†		2	10	1	—	1	1	11	1	—
Deaths		—					—			
Puerperal pyrexia	162	10	20		1	123	6	23		—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,027	60	176	58	27	1,023	55	139	24	24
Deaths	2	—	1	—	—	2		—	—	
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	11	1	4	7	—					
Deaths	1	—	—	—	—					
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—			—	—			—	-	—
Whooping-cough	1,555	229	47	36	9	3,592	86	485		11
Deaths	16	3	—	—		39	2	21	—	
Deaths (0–1 year)	343	31	67	46	27	350	23	107	44	16
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,615	577	635	244	159	5,495	644	809	219	178
Annual death rate (per 1,000 persons living)			14·3	16·3	‡			17·6	14·5	15·6
Live births	6,266	640	944	343	289	4,300	342	808	278	224
Annual rate per 1,000 persons living			19·5	22·9	‡			16·4	18·5	19·6
Stillbirths	232	18	43			211	20	41		
Rate per 1,000 total births (including stillborn)			44					48		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Puerperal fever is included with puerperal pyrexia except in London (administrative county).

‡ Owing to evacuation schemes and other movements of population birth and death rates for Northern Ireland are no longer available.

Medical News

Dr. Philip Hamill, F.R.C.P., will deliver a lecture on " Prescribing in Wartime " before the Pharmaceutical Society of Great Britain at Friends House, Euston Road, N.W., on Wednesday, May 13, at 2.30 p.m.

A meeting of the Tuberculosis Association will be held at 26, Portland Place, W., on Friday, May 15, at 4.30 p.m., when a paper on " The Outline of a Scheme for the Prevention of Tuberculosis " will be read by Dr. J. E. Stokes. At 5 30 p.m. there will be a continuation of the discussion held at previous meetings on the rehabilitation of the tuberculous.

The annual meeting of the members of the Royal Medical Benevolent Fund will be held at 4 p.m. on Thursday, May 21, at 10, Wimpole Street, W.1, when the financial statement for the year 1941 will be presented and the officers and committee for the current year elected.

A meeting of the Medical Society for the Study of Venereal Diseases will be held at 11, Chandos Street, W., on May 30, at 2 p.m., when there will be a discussion on " Non-gonococcal Urethritis," to be opened by Wing Comdr. G. L. M. McElligott and Dr. I. N. Orpwood Price.

The London School of Dermatology, at St. John's Hospital for Diseases of the Skin, Leicester Square, W.C., proposes to hold a short course of lectures, beginning in the third week of May, on Wednesdays at 4.30 p.m. The lectures will be on practical subjects and specially directed to be of help to medical officers of H.M. Forces. There will be no fee

The Nutrition Society is arranging a whole-day conference on " Problems of Collective Feeding in Wartime," to be held at the London School of Hygiene, Keppel Street, W.C., on Saturday, May 30, at 11 a.m.

The 31st annual meeting of the Canadian Public Health Association will be held in Toronto on June 1 to 3 under the presidency of Dr. J. J. McCann.

The Medical Bureau of the Scottish National Union of Students has drawn up a report on medical education representing the collective opinion of the medical students of the four university medical schools in Scotland (Aberdeen, Edinburgh, Glasgow, and St. Andrews and Dundee). In order to obtain a reliable cross-section of student opinion the appropriate committees in the universities were asked to hold mass meetings and issue questionaries, each committee adopting the same general plan. The task of collating the results of these inquiries was entrusted to Mr. R. M. Archibald of the S.N.U.S. Medical Bureau, 11, Park Circus Place, Glasgow, C.3, from whom copies of the printed report can be obtained (price 2d.). The report has already been submitted to the B.M.A. Medical Planning Commission for consideration by one of its committees.

Between Aug. 1, 1939, and July 31, 1941, the Hospital Saving Association put £200,000 into a special war emergency reserve fund, on the understanding that the distribution of this sum would be determined in due course in consultation with the voluntary hospitals. To relieve their immediate necessities it has been decided to release £100,000 at once. In 1939 the H.S.A. paid the hospitals £700,000; in 1941 the figure was £556,000. The extra £100,000 will now be shared among the hospitals on the basis of the mean of the amount each received in those two years. This was agreed at a recent meeting between the H.S.A. and representatives of the London voluntary hospitals. Any other method would have been unfair, for the hospitals have not fared alike at the hands of the Luftwaffe, and those which have suffered have had to reduce their bed complement, thereby losing patients and the H.S.A. payments those patients would have brought.

The King has granted Major John Gilmour, C.M.G., M.C., M.B., Ch.B., F.R.C.S.Ed., authority to wear the Insignia of Grand Officer of the Order of Ismail, conferred upon him by the King of Egypt.

Mr. Gerald S. Hughes, J.P., F.R.C.S.Ed., has been elected Governour of the Merchant Adventurers Company of York.

Lord Horder has accepted the presidency of the Food Education Society in succession to the late Sybil Lady Rhondda.

Ten people (seven men and three women) have died recently in Glasgow from the effects of poisoning caused by drinking wood alcohol in the form of industrial spirit, presumably pilfered from casks stored at a dock. Several other persons are seriously ill in hospital with wood alcohol poisoning, which had accounted for the deaths of five men in the early part of April.

The address of the Drugs Branch, Home Office, is now Meyrick Cliffs Hotel, Beacon Road, Bournemouth, Hants.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Secretary of the Journal Board, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager (hours 9 a.m. to 5 p.m.). Orders for copies of the *Journal* and subscriptions should be sent to the Secretary.

TELEPHONE NO.—B.M.A. and *B.M.J.*: EUSTON 2111.

TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Persistent Psoriasis

S. C. M. writes: It has crossed my mind that perhaps some of your readers might be able to throw new light upon an old subject—psoriasis. There appears to be no cause and no cure, but in the following case the victim is a practising midwife; if the condition spreads much more she will soon cease as such. *History.*—Painful swellings, discoloration of the legs, diagnosed as erythema nodosum, at the ages of 12, 21, 24, 29. Each time there was pain in the joints and general tiredness for several weeks before the " nodules " reddened on the surface. At the age of 30 the psoriasis appeared: since then there has been no other complaint but ulcers in the mouth. All treatments, regular and irregular, have failed, including arsenic, autohaemotherapy, removal of tonsils followed by autogenous vaccines, and sulphapyridine.

Sharpening Blades and Needles

P. K. writes: I should be very glad of any advice or " tips " on the sharpening and cleaning of scalpel blades and hypodermic needles.

LETTERS, NOTES, ETC.

The Baby's Milk

Mrs. MARIE C. STOPES, D.Sc., Ph.D., writes: Your annotation entitled " What is a Truby King Baby? " (March 14, p. 365) is very welcome. Even Dr. Truby King's original formulae for so-called " humanized milk," in which no commercialized product but merely water, ordinary lime-water, and ordinary " sugar of milk " were used, were misnomers, and deprived the infant of essential mineral salts, etc. Now these formulae are changed and the use of specialized products has become associated with Dr. Truby King's system; one wonders whether he would have welcomed the position to-day. In my opinion, unless *whey* from fresh milk is used to dilute the full milk, the infant is defrauded Particularly in wartime it would help young mothers to nourish their babies properly if the medical profession would encourage them to use the whey from goat's milk, because it is so very much easier to make. Goat's milk sets a much harder curd much more easily and quickly than does cow's milk, and, instead of the rather toilsome and extravagant process with cow's milk, it is a simple and easy matter to make part of the goat's milk into whey to dilute the rest. All anxiety about tuberculous infection is banished, and the child can be fed, as it should be fed, on fresh milk with its mineral and vital content.

Blackcurrant Concentrate

Dr. MARY BAKER (Birmingham) writes: Dr. Howard English states (April 25, p. 542) that the blackcurrant concentrate issued by the Ministry of Health is unsuitable for young infants. The prescribed dose of the syrup is two teaspoons three times daily, but I find that even less than one-third of this quantity causes frequent loose green motions, a result confirmed by other doctors. For a child of from 6 months to 2 years blackcurrant purée is issued, and this produces the same effect in a young infant. The purée must be consumed within seven days of opening the tin, an impossible feat for an infant; hence the remainder goes for workers' sandwiches, etc., as stated. Would it not be more satisfactory to provide ascorbic acid tablets in place of the blackcurrant concentrate?

The New Order of Things

Dr. B. RICHARDSON BILLINGS writes: One is accustomed to see cars with a " DOCTOR " label on the windscreen; but I was surprised when I met to-day a car with " OSTEOPATH " as the legend. " It makes you think."

*** It does.—ED., *B.M.J.*